ĀTEC® Associates, Inc.

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May 8, 1987
File 6-3030

Mr. Terry F. Gray, Chief
Plan Review and Permit Section
Indiana Department of Environmental Management
105 S. Meridian Street
Indianapolis, IN 46225

RE: Response to Notice of Deficiency
Site Assessment and Closure Plan
Conservation Chemical Company of Illinois
IND 040888992

Dear Mr. Gray:

We apologize for the delay in our response to the notice of deficiency. Due to the complex nature of this site, numerous parties involved, and the level of detail required, our response has taken longer than 30 days to complete.

These responses represent an amendment to our May 23, 1986 closure plan. Once we receive our final technical review, we propose to reissue a revised closure plan incorporating these and later comment responses.

Very truly yours,
Atec Associates, Inc.

Steven Stanford

Steven Stanford
Geologist

John W. Weaver II

John W. Weaver II, P.E.
Vice President

cc: Mr. Hak Cho, U.S. EPA, Region V
Ms. Sally Swanson, U.S. EPA, Region V
Mr. Louis Rundio, McDermott, Will and Emery
Mr. Norman Hjersted, CCCI

RESPONSE TO NOTICE OF DEFICIENCY
Conservation Chemical Company of Illinois
IND 040888992

1. Upon completion of closure, the owner or operator and an independent, registered professional engineer shall provide certification that closure activities were performed in accordance with the approved closure plan.

2. The owner of the property in which the disposal facility is located shall record, in accordance with state law, a notation on the deed to the facility property - or on some other instrument which is normally examined through a title search - that will in perpetuity notify any potential purchaser of this property that, "a. the land has been used to manage hazardous waste, and b. its use is restricted".

3. Within 90 days after closure is complete, the owner or operator shall submit to the local land authority, and the IDEM a survey plat indicating the location and dimensions of any and all disposal areas with regard to permanent survey benchmarks. Also to be submitted, as above, shall be a record of the type, location, and quantities of wastes disposed of within the facility.

4. According to information presented in the "Climatic Atlas of the United States," prepared by the U.S. Department of Commerce, the Gary area is characterized by 36 inches of liquid equivalent precipitation annually.

5. We are currently obtaining sample results from the study performed by the PRP group. We have requested this information from the PRP group and expect to receive it soon. We shall evaluate the results and make revisions to the closure plan, if appropriate, based on those results.

6. Since the neutral acid sludges are not likely to be ignitable, the tank walls may be cut using a torch or cold-cut. The actual method shall be left for the contractor to decide. Prior to torch cutting, at least five (5) representative samples shall be collected from the tank and analyzed for closed-cup flash point. Flash points exceeding 200°F shall be considered acceptable for torch cutting. In addition, vapors in the tank must also be evaluated using an explosive gas detector, prior to cutting. As indicated in Section 4.4 of the closure plan, a specific health and safety program shall be prepared by a certified industrial hygienist prior to the initiation of construction activities.

7. Sludge boxes shall be lined using 40 mil high density polyethylene such as that supplied by Gundle Lining Systems, Inc. This material is quite sturdy and has been used with success as a synthetic landfill liner.

8. The feasibility of our proposed stabilization procedure is well documented in other closures performed in Region V. Waste specific testing is still needed to refine the mixing ratios. This testing shall be left to material suppliers, with review and confirmation testing by the owner or independent representative. Since the precise ratio of mixing agents shall have little bearing on project costs, lab testing can be performed subsequent to closure plan approval, just prior to the letting of contractor bids. As stated in Section 4.2.2, mixing shall be performed in lined sludge boxes. The mixing location shall be chosen to minimize material handling, likely adjacent to Tank 20. Stabilized sludges shall then be placed in the "pie-shaped" or off-site basins, distributed to help achieve the final cap design grades.

9. Caution shall be exercised in the transfer of materials to over-the-road tankers. Removal of oil and water shall be performed using a high-powered vacuum or positive displacement pump. If necessary, a temporary driveway of pavement stone may be constructed to expedite ingress and egress of trucks. An on-site traffic manager shall be used to direct truck traffic in an efficient manner. To reduce the possibility of spillage, polyethylene sheeting can be used to line a temporary containment area to be excavated into the site soils. This would likely consist of a shallow dike structure, through which the trucks can be routed for material pick up.

10. Based on available characterization data, several treatment contractors indicated that oils contained in Tanks 19 and 22 would be treatable using the process described in the closure plan. It was also indicated that water and water/oil emulsions would not be treatable and, therefore, subject to incineration.

11. Assuming that all PCB contaminated oils must be incinerated would necessitate the incineration of approximately 3,250,000 pounds of material not specified in the closure plan. This would result in an additional cost of $0.30/lb to dispose of these materials. The incremental addition to our estimated cost would therefore be $975,000.

12. Disposal Systems, Inc. indicated that they would accept all responsibility in obtaining permits to operate in the State of Indiana and U.S. EPA, Region V.

13. Treated oils would be free of PCB's in excess of 50 ppm. Therefore, such materials would become salvageable products and sold on the open market. Untreatable water and water/oil emulsions would be subject to incineration.

14. Destruction of the cyanide shall be undertaken through the complete oxidation of cyanide ions by chlorination. The cyanide shall be treated using a sodium hypochlorite ($NaOCl$) solution.

15. The closure plan was prepared using information from several sources. Information contained in Table 6 was provided by the CCCI and thus likely reflects most reliably the tanks which contain cyanide or at least residues of cyanide. During operation, cyanide has likely been transferred from tank to tank, therefore explaining why fewer tanks (than reported in the Emergency Action Plan) now contain cyanide materials.

16. Cyanide concentrations shall be reduced through treatment to concentrations less than 0.22 ppm as determined using approved EPA test procedures. This concentration is based on the EPA Office of Drinking Water Standards health advisory document for cyanide.

17. Treated cyanide wastes shall be disposed off-site by a RCRA licensed liquid waste disposal facility.

18. Cyanide wastes shall be deemed untreatable if the treatment process fails to reduce concentrations to 0.22 ppm.

19. If cyanide materials prove untreatable, off-site disposal shall be selected. Disposal of these materials by a RCRA licensed contractor can be accomplished at a cost of $3.50 per gallon. Based on an inventory of 150,000 gallons, an incremental additional cost of $525,000 would be incurred.

20. Special care will be necessary in transferring silicatetrachloride. In particular, contact with water must be avoided. Specific handling procedures shall be left for the contractor to decide, subject to review and approval by the owner.

21. Pickle liquor and process acid were used interchangeably in the reaction to produce ferric chloride. According to CCCI, Tanks 40 and 41 contain mostly rain water and small quantities of pickle liquor or process acid.

22. Not all sources of information for this site correlate with one another. According to CCCI, Tank 42 contains silicatetrachloride.

23. Information contained in Table 7 was taken from the Part B Application. Tanks 50 and 51 were likely subject to transfer of pickle liquor subsequent to completion of the Part B Application.

24. Estimated costs for drum disposal are as follows. This estimate represents an additional incremental cost to that estimate contained in the closure plan. Cost estimates for analytical characterization are based on 33 types of materials stored in 154 drums, as described in the Emergency Action Plan.

a. Waste characterization
33 samples x $500.00/ea..................$16,500.00

b. Drum handling, EPA level "C",
incl. equipment, over packs, etc.
3-man crew x 5 days x $1,000/day..........$5,000.00

c. Shipping of drums, incl.
manifesting and paperwork
Chicago..................................$1,500.00

d. Disposal fee for incineration
or placement in RCRA landfill
154 drums x $100.00/drum.................<u>$15,400.00</u>

Total Estimated Cost.........$41,400.00

25. This section shall be retitled in the revised closure plan.

26. As reported in the closure plan, several drums are characterized by a closed-cup flash point of less than 200°F.

27. Characterization of drummed wastes will be required to ensure the safety of personnel and equipment during the waste transfer operations, to provide the data necessary to identify the appropriate method of disposal, to satisfy the requirements of the disposal facilities, and to comply with manifesting requirements. Complete laboratory analyses of the wastes on a drum by drum basis will be more costly than the actual removal and transportation costs and, in our opinion, is not required. We believe that the wastes can be safely and effectively handled and disposed through a waste characterization procedure which is based on the assumption that all materials originating from the site will be either incinerated, if they are combustible liquids, or otherwise will be disposed at a secure landfill. Under this operating philosophy, the contents of each drum will be screened to define basic characteristics affecting their safe handling and disposal. Following this initial screening the drums will be assigned to "batches" of drums containing wastes of similar character and a complete laboratory analysis will be performed on a composite sample of the drums in a particular batch. Based on information contained in the Emergency Action Plan, 33 batches of drums shall be required. Drum handling procedures are outlined in the attached Flow Chart 1, titled "Drum Segregation and Waste Typing".

The batch characterization process will require detailed laboratory analyses of a composite sample of the batch to manifest each truckload of material leaving the site. Each batch will entail the manifesting of approximately 3 drums or 165 gallons. Based on the envisioned batch size, a minimum of

33 detailed analyses will be required. These analyses will be expedited by providing an on-site laboratory with the capability to conduct the required waste analyses and the analyses required for personnel and environmental monitoring.

The laboratory should be equipped with atomic adsorption and gas chromotography capabilities. Any mass spectroscopy required to verify the on-site analyses may be conducted at an off-site laboratory.

The general aspects of a proposed segregation procedure are illustrated on the attached Flow Chart 2, titled "Waste Characterization". Under this procedure, the characterization of the wastes will proceed as follows:

a. The initial segregation should be made based on the phase (whether a solid or liquid) characteristics of the waste. Viscous or sludge-like wastes should undergo the "liquids" screening procedure. Drums containing liquid and solid phases should be decanted and the individual phases should be analyzed separately.

b. Solids should be tested for reactivity with water, acid, and caustic solutions. Following the initial characterization, the wastes should be analyzed in the laboratory either as individual drums or, where applicable, as a batch.

c. Liquid wastes with a pH above 12 should be segregated and analyzed for cyanides and sulfides. After laboratory analyses, the wastes may be disposed as corrosive.

d. Liquid wastes with a pH below 2 should be segregated as acids and analyzed for chlorides, fluorides, and nitrates. After laboratory analyses the wastes may be neutralized as required and disposed.

Wastes in lined drums should be segregated and checked as oxidizers and for reactivity with water. If the materials are oxidizers or reactive, they should be assigned to a special category. Following laboratory analyses they may be assigned for disposal.

Wastes appearing to be oils should be batched and analyzed for PCB's. Upon completion of the laboratory analyses, the wastes may be assigned for disposal.

Wastes with pH values between 2 and 12 should first be screened as combustible or non-combustible wastes based on their ability to support combustion when exposed to a propane flame.

Combustible and non-combustible wastes should be treated as separate streams but may be characterized in the same manner. Compatibility and water reactivity of batches of waste may be tested on each waste stream by placing samples of material from a batch of drums into a small pressure vessel equipped with thermal and pressure sensing equipment and mixing. A rise in temperature or pressure indicates non-compatibility of the materials and the source drum(s) should be removed from the batch for further analysis. Following compatibility testing, the composite (batch) sample in the pressure vessel should be analyzed for PCB's, chlorinated pesticides and solvents, cyanides, and sulfides. The batch may then be manifested and transported for incineration of land disposal as appropriate.

28. Wipe tests shall be performed on the interior surfaces and samples analyzed for appropriate parameters, i.e. cyanide for cyanide storage tanks, PCB's for tanks containing PCB contaminated materials, etc. Tanks subject to high-pressure water cleaning shall be checked by sampling and analysis of final rinsate. For cyanide, final rinsate concentrations should not exceed 0.22 mg/l, a level recommended by the U.S. EPA for the consumption of drinking water by children. Heavy metals should be at concentrations no higher than Interim Primary Drinking Water Standards. If acid/alkali materials are involved, final pH should be in the range of $2 < pH < 12$. For PCB containing tanks, PCB's shall be present in the decontaminated tanks at concentrations of less than 10 $ug/100cm^2$, as determined by the standard wipe test, as defined in the EPA Polychlorinated Biphenyls Spill Cleanup Policy. For hazardous constituents for which no proposed standards exist, alternate concentration limits shall be proposed.

29. This will be left for the contractor to decide based on his proposed stabilization materials. The contractor shall submit, 30 days prior to construction, results of laboratory bench testing indicating precise fixing agent mixing ratios, etc. The contractor's proposed procedure must provide for thorough mixing of the sludges with proposed additives. This could possibly be achieved using a backhoe in-situ, in containers, or using a pug mill. Based on the contractor's submitted procedure, the site health and safety plan shall be reviewed and modified to consider the contractor's proposed work plan. Such review and revision shall be performed by a certified industrial hygienist.

30. This comment refers to an obvious typographical error. The plan shall be amended to read "a <u>maximum</u> particle size of three inches".

31. The closure plan shall be amended to include a cap of two feet of compacted clay overlain by at least two foot of soil capable of supporting vegetative growth. A 1% slope shall be maintained as minimum.

32. Capping procedures shall be similar for the entire site, including grading of the existing surface followed by the installation of the cap. Where necessary, impounded sludges shall first be stabilized using appropriate additives, replaced in the respective surface impoundment and then covered. Stabilized sludges may be used, where necessary, to modify existing grades such that a final slope of at least 1% is provided.

33. As mentioned earlier, the primary acceptance criterion for clay cap material is that once in place, it should exhibit a maximum permeability of 10^{-7} cm/sec. Therefore, once a borrow area is identified, it shall be explored either by test pits or soil borings and at least ten representative samples shall be obtained for permeability, classification and moisture-density testing. Samples for permeability testing shall be precompacted with a 95% Standard Proctor effort at their natural moisture content, then subjected to triaxial and/or falling-head permeability testing.

Grain size, moisture content, and Atterburg limit tests shall be performed on each sample such that later correlation testing can be performed. Clay soil materials must pass the permeability testing criteria prior to their approval for use. From this information, a correlation between satisfactory permeability performance and grain size and density test measurements shall be developed and used for construction control purposes.

34. As indicated in our response to comment 32, precise specifications for mixing additives shall be left for the contractor to decide. The feasibility of our proposed stabilization procedure is well documented in other closures performed in Region V. Waste specific testing is still needed to refine the necessary mixing ratios. This testing shall be left to the material suppliers and contractors subject to the approval and independent verification by the owner.

35. The slurry wall shall be a soil/bentonite mixture containing additives such as cement or other material(s) necessary to render the slurry resistant to the ground water chemistry. Leachate/slurry compatibility testing shall be completed by the slurry contractor in accordance with Section 4.3.1.1 of the closure plan. Results of leachate/slurry compatibility testing shall be provided at least 30 days prior to construction and subject to review and approval by the owner.

36. The slurry wall shall key into the gray lucustrine clays encountered beneath the surficial sands, to a depth at least 3 feet into the clay formation. It is our experience and local contractors have indicated that installation of a slurry wall to a depth of 40 to 45 feet through sand can be achieved with relative ease. Numerous slurry structures have been completed in Lake County Indiana, including approximately 5.5 linear miles of slurry wall to a depth of 45 feet, constructed by a single contractor. Both the vibrated beam method and trench excavation methods are viable at this site. Attached is a letter from a local contractor which further supports our contention.

37. As discussed in our response to comment 31, we propose to increase soil thicknesses to provide for a 2-foot clay cap overlain by two feet of soil sufficient to support vegetative growth. Due to the low plasticity of glacial clays available in this area, two feet of soil placed over the two-foot layer of low permeability clay shall be more than adequate to prevent frost damage. Calculations documenting this fact shall be provided in the revised closure plan.

38. The following time frames are provided:

Elapsed Time (Days)	Activity
1	Initiate closure activities
25	Empty tanks and dispose of contents (due to its reactive nature, silica tetrachloride to be removed first)
50	Appropriate decontamination of tanks
75	Demolish, salvage or scrap tanks, as appropriate
100	Regrade site
125	Install cap and slurry wall
150	Install monitoring wells
175	Independent certification of closure, certification submitted
180	Survey plat submitted, notice placed in deed

39. Due to the complex nature of this site; the treatment, removal, and storage of hazardous wastes will require longer than 90 days.

40. All post-closure monitoring and maintenance activities will be continued for 30 years after the date of closure completion.

41. The post closure use of this property shall never be allowed to disturb the integrity of the final cover. This statement will be referenced in the property deed as well as the closure plan.

42. The CCCI shall submit the post-closure plan at least 180 days prior to the date closure is expected to begin. The CCCI may amend the post-closure plan during the post-closure care period. The plan shall be amended any time changes in monitoring or maintenance plans or events which occur during the post-closure care period affect the post-closure plan. The CCCI shall petition the Regional Administrator within 60 days of the changes or events to allow the plan to be modified.

43. The CCCI shall record, in accordance with state law, a notation on the deed to the facility property - or on some other instrument which is normally examined through a title search - that will in perpetuity notify any potential purchaser of this property that, "the land has been used to manage hazardous waste, and its use is restricted".

44. More specific cost estimates, including additional incremental costs mentioned in earlier responses, are under preparation.

45. The additional one foot of soil proposed in our previous response results in an additional incremental cost of 12,000 yd^3 at $7.00/$yd^3$, or $85,000.00.

46. The average depth of the slurry wall is anticipated to be 40 to 45 feet, necessitating approximately 104,000 square feet of slurry wall. Using the vibrated beam method, local contractors inform us that the slurry wall can be installed, with relative ease, at a cost of about $2.50 per square foot. The cost estimate contained in our closure plan is, therefore, a reasonable estimate. Slurry walls installed by other process are competitivly priced.

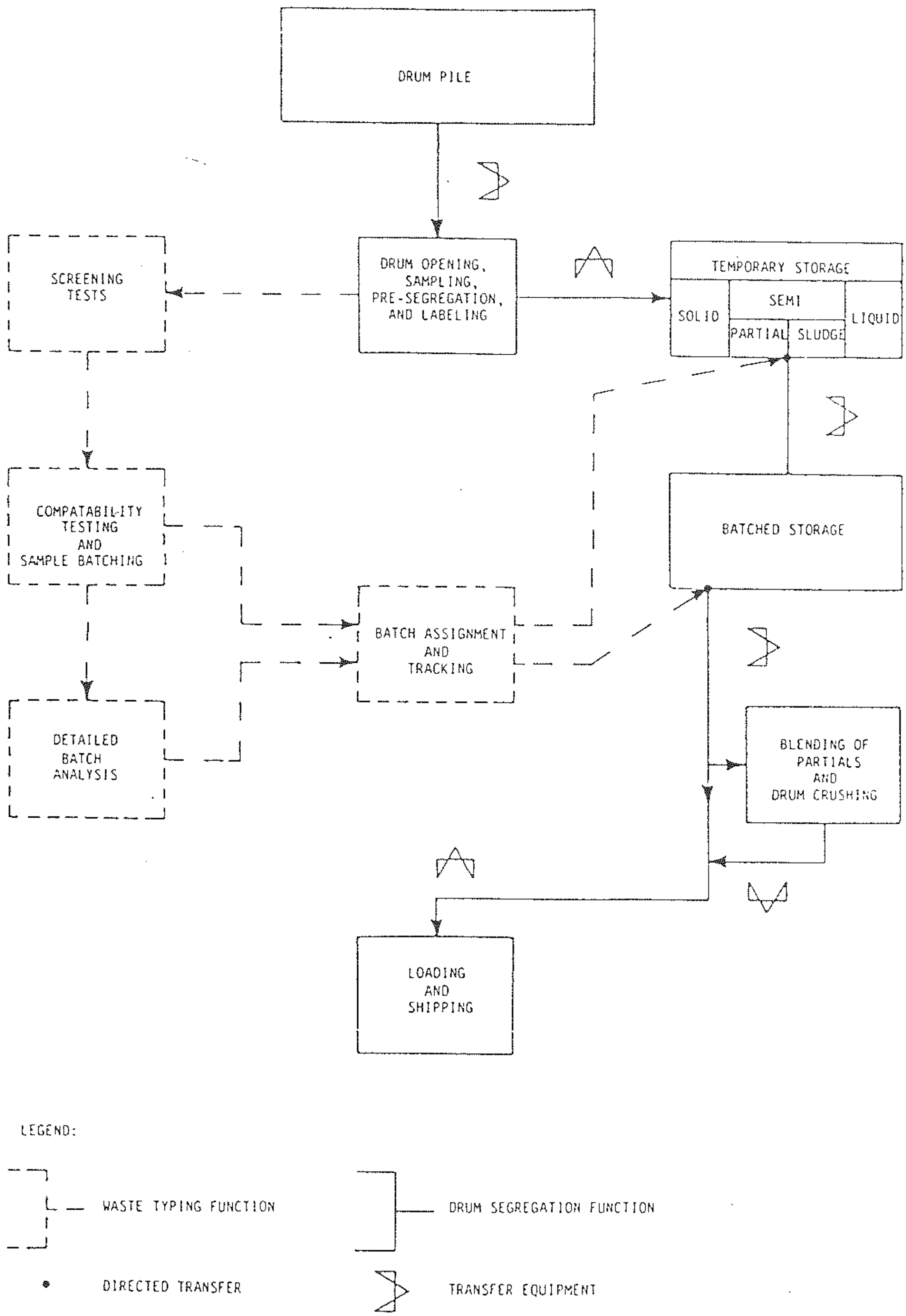
47. As discussed in our responses to comments 19 and 11, additional incremental costs of $975,000 and $525,000, would be incurred for the off-site disposal of cyanides and PCB's, respectively.

48. If assessment monitoring of the ground water is required for years 2 through 30, additional costs would be incurred as follows: 8 wells x 1,000/ea x 4 quarters x 29 years = $928,000.

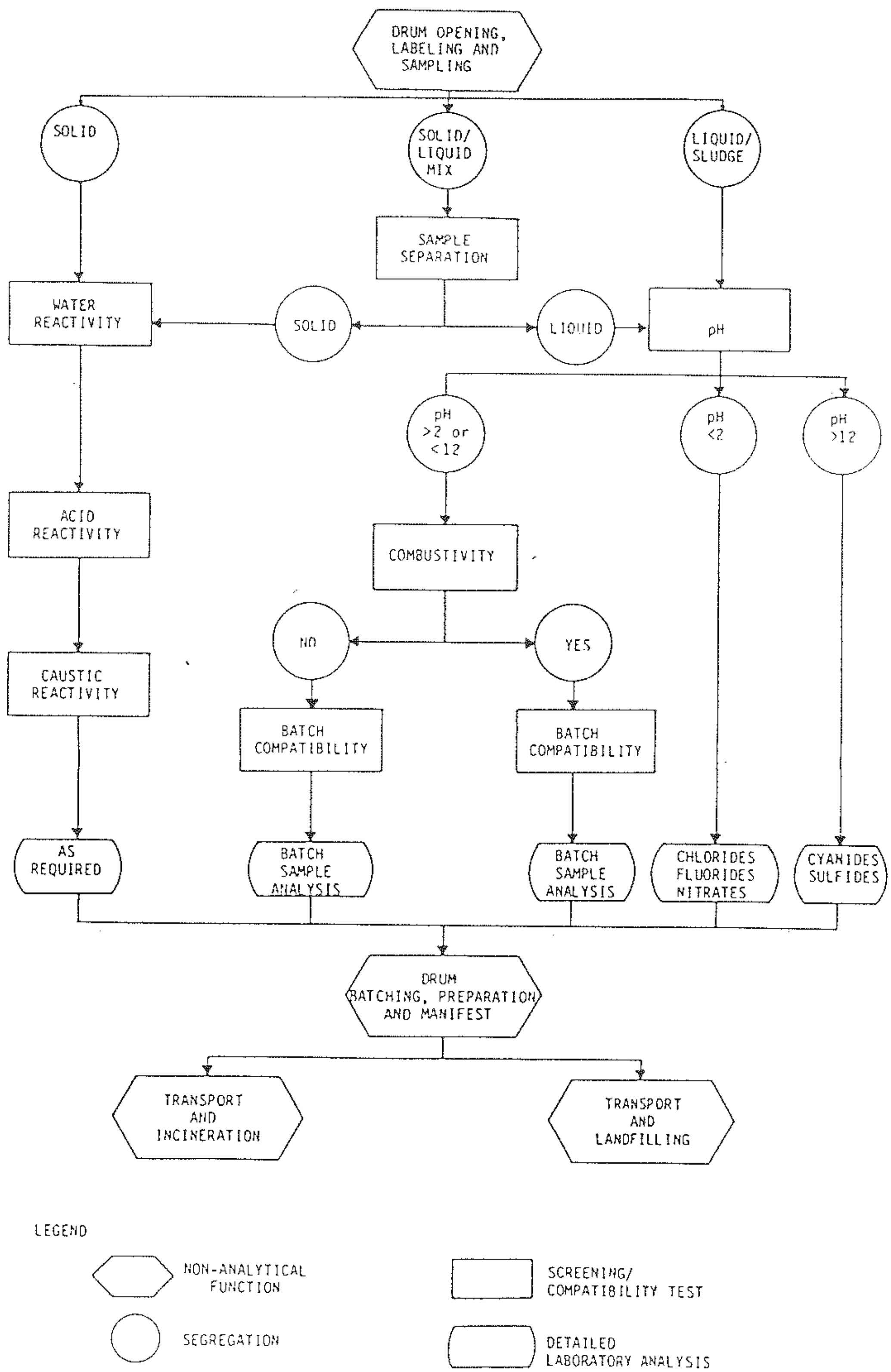
49. If U.S. EPA wells C3 and C4 may not be used, two additional monitoring wells of 2-inch PVC could be installed at an approximate cost of $1,200 per well. Thus, two monitoring wells would result in an additional incremental cost of $2,400.

50. Response to this comment is outside the technical scope of this closure plan. Response to this comment shall be provided by others.

FUNCTION FLOW CHART 1
DRUM SEGREGATION AND WASTE TYPING



FUNCTION FLOW CHART 2
WASTE CHARACTERIZATION



Slurry Systems INC.
CONTRACTORS

May 5, 1987

ATEC
1501 E. Main
Griffith, IN 46319

Attn: Steve Stanford

Re: Slurry Wall Installation

Dear Sir:

In response to our telephone conversation I am enclosing write-ups on a number of slurry wall projects that we have completed.

Your quote, "It will be impractical if not impossible to install a slurry wall to a 40 foot depth." is very much out of line. If anything, 40 feet is the medium depth of slurry walls we have installed in the Northern Indiana and Chicago area.

The general area along Lake Michigan has 30 to 40 feet of medium sand. Our technique is very effective in this type of soil. From our experience in the Northern Indiana area there should be no problem installing a slurry wall to a 40 foot depth. However, we would need additional data to determine the soil conditions for a specific location.

Should you have further questions or require additional information please contact Fred Schmednecht or Bob Budgin at (219) 949-0561.

Respectfully yours,

Bob Budgin

Bob Budgin

All Types of Slurry Walls - Water Barriers - Pond Liners
4040 West 4th Avenue • Gary, Indiana 46406 • (219) 949-0561

Was copy mailed
To Rundio and atec?
M

STATE of INDIANA

DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS, 46225

105 South Meridian Street

January 29, 1987

Mr. Norman B. Hjersted, President
Conservation Chemical Company of Illinois
5201 Johnson Drive
Suite 400
Mission, KS 66205

Re: Notice of Deficiency
Second Completeness/Preliminary
Technical Review
Conservation Chemical Company of
Illinois, Gary, Indiana
IND040888992

Dear Mr. Hjersted:

This letter and attachment represent the Indiana Department of Environmental Management's (IDEM) second completeness and preliminary technical review of the Conservation Chemical Company of Illinois (CCCI) closure plan dated May 23, 1986. A July 28, 1986, CCCI response to the July 17, 1986, EPA/IDEM review is considered part of this closure plan. The joint U.S. Environmental Protection Agency (EPA) and IDEM review dated July 17, 1986, was the first completeness review.

Your response to this Notice of Deficiency should be received by the IDEM within 30 days of the date of this letter.

If you have any questions or need assistance, please contact Mr. Robert Cappiello of my staff at AC 317/232-3221.

Very truly yours,

Terry F. Gray

Terry F. Gray, Chief
Plan Review and Permit Section
Hazardous Waste Management Branch
Solid and Hazardous Waste Management

RC/rmw
cc: Mr. Hak Cho, U.S. EPA, Region V (with enclosures)
Ms. Sally Swanson, U.S. EPA, Region V (with enclosures)
Mr. Louis Rundio, McDermott, Will and Emery (with enclosures)
Mr. John W. Weaver, ATEC (with enclosures)

Notice of Deficiency
Second Completeness/Preliminary Technical Review
Conservation Chemical Company of Illinois
IND040888992

Section 1.0 Introduction

1. There is no mention that owner or operator certification and certification by an independent registered Professional Engineer will be provided upon completion of closure. (320 IAC 4.1-21-6)

2. There is no mention of the required land disposal notation on the deed to the facility property. (320 IAC 4.1-21-10)

Section 2.0 Site Characterization

3. The amount of each waste type left in the landfill upon closure must be stated. (320 IAC 4.1-28-4(c)).

4. The climate (rainfall) of the area must be stated. (320 IAC 4.2-28-4(c)).

Section 4.0 Closure Plan

Subsection 4.2.1.1 - Waste Characterization

5. When the closure plan was prepared, results of samples from tanks containing cyanide and metal hydroxide sludges were not available. If those sampling results are now available, they should be incorporated into the revised closure plan.

Subsection 4.2.2 - Neutral Acid Sludge--Disposal

6. The plan does not specify the method to be used for cutting the tank wall or appropriate safety precautions to be used. (320 IAC 4.1-24-5)

7. CCCI proposed to use lime kiln dust to solidify the neutralized acid sludge in lined sludge boxes. However, CCCI did not provide any information on the material of the liner and how to keep the integrity of the liner during mixing.

8. CCCI proposes to stabilize neutralized acid sludge on-site with Type C fly ash, lime kiln dust, and/or portland cement. However, CCCI did not include the detailed information regarding the stabilization process or the disposal method. This information should include: the proposed mixing ratio of acid sludge to fly ash, lime kiln dust and/or the portland cement; how and where to mix those materials; what kind of test will be conducted to determine if it is feasible to stabilize the sludge; and how and where to dispose the stabilized material on-site.

Subsection 4.2.3 - Oil, PCBs, and Water--Disposal

9. According to Table 5 of the closure plan, Tanks 19 and 22 contain 637,000 gallons of PCB-contaminated materials. This quantity will fill 106 tankers each with a 6,000-gallon capacity. The plan does not include detailed procedures on transferring the stored materials to the tankers and managing the tankers to prevent spills.

10. The plan does not specify the criteria CCCI used to determine that the PCB material is treatable.

11. The plan assumes that 80 percent of the PCB contaminants are treatable. However, if the PCB contaminants are not treatable, then incineration is the only disposal alternative. Therefore, the cost estimate should also reflect the contingency of incineration as the sole alternative. (320 IAC 4.1-22-3)

12. The plan does not indicate whether Disposal Systems, Inc.'s, portable treatment unit has the required permits or approvals to operate in the State of Indiana and the U.S. EPA, Region V.

13. The plan does not describe the disposal procedures for treated waste oil and water. (320 IAC 4.1-21-2)

Subsection 4.2.4 - Cyanide Solution--Disposal

14. CCCI proposes to treat the cyanide waste with hypochlorite. Therefore, the heading for this section should be "TREATMENT." Specify which type of hypochlorite will be used.

15. It is not clear how many tanks are used to store the cyanide waste. The plan states that the liquid cyanide wastes are stored in 12 tanks. However, the Emergency Act Plan states that the wastes are stored in 13 tanks, while Table 6 of the closure plan shows 16 tanks. Please explain these discrepancies.

16. The plan does not specify the final cyanide concentration level of the cyanide waste after treatment.

17. The plan does not specify whether CCCI will dispose of the treated cyanide waste on-site or off-site. If on-site, CCCI should specify the disposal location and procedures.

18. The plan does not specify the criteria CCCI will use to determine which cyanide waste is untreatable.

19. The closure plan cost estimate should also reflect the contingency of the cyanide waste being untreatable on-site. (320 IAC 4.1-22-3)

Subsection 4.2.6 - Silica Tetrachloride--Disposal

20. The plan states that special care will be necessary in handling the silica tetrachloride. However, CCCI did not specify the special care to be taken during the transfer operations.

Subsection 4.2.7 - Pickle Liquor and Process Products--Disposal

21. It is not clear what materials are stored in Tanks 40 and 41. The text of the plan states approximately 17,000 gallons of rain water and process acid are stored in Tanks 40 and 41. However, Table 7 of the plan shows that pickle liquor or process acid is stored in Tanks 40 and 41.

22. It is not clear what material Tank 42 contains. The plan states that Tank 42 contains pickle liquor. However, Table 7 shows that Tank 42 contains 2,500 gallons of silica tetrachloride.

23. The plan indicates that Tanks 50 and 51 contain approximately 1,400 gallons of pickle liquor. However, those two tanks are not included in Table 7.

Subsection 4.2.8 - Drums--Disposal

24. The cost estimate for drum disposal is not included in the Closure Plan. (320 IAC 4.1-22-3)

25. This subsection should be separate from the Tank Storage section or the section should be retitled.

26. The plan states that drums contain ignitable waste. It should provide the basis for this determination.

27. The plan states that approximately 154 drums remain at the site and provides waste analyses for 15 drums. However, the plan does not provide procedures and analytical methods to determine the contents of the remaining 139 drums.

Subsection 4.2.9 - Decontamination Procedures

28. The plan does not provide the cleanup standards to be applied to all the storage tanks after the decontamination process to verify that all hazardous wastes have been removed. (320 IAC 4.1-24-5 and 21-5)

Subsection 4.3.1.1 - Earthen Basins--Construction Considerations

29. The plan does not specify how and where to mix the lime and the contaminated waste or soil, and what safety precautions will be taken.

30. CCCI proposes to use fill material for the clay cap that has a minimum particle size of three inches. This is grossly inappropriate for a cap designed to keep water from infiltrating into the surface impoundments. (320 IAC 4.1-28-4)

31. Although the clay cap is depicted in Figure 10 of the closure plan, the closure plan does not provide a detailed description or drawing of the clay cap (the thickness of the clay material, and the slope of the final cap, among other details). (320 IAC 4.1-28-4)

32. CCCI proposed to close four basins at the site. However, detailed capping procedures for those basins are not provided. Therefore, it is not known that the capping procedures for the basins at Tanks 19 and 22 are the same as those for the pie-shaped and off-site basins. (320 IAC 4.1-28-4)

33. The plan does not provide information on the permeability of the final clay cap and how this will be verified. (320 IAC 4.1-28-4)

34. Specifications for the stabilization material are not given. (320 IAC 4.1-28-4)

35. The plan does not specify the material to be used for constructing the slurry wall. (320 IAC 4.1-28-4)

36. The plan does not identify the geologic formation that the slurry walls will be tied to. Boring logs indicate the presence of a 40-foot-thick sand layer above the confining clay layer. It will be impractical, if not impossible, to install a slurry wall to this depth in the sand formation. (320 IAC 4.1-28-4)

37. CCCI proposed to cap the basins with two (2) feet of clay, six (6) inches of sand, and six (6) inches of topsoil. However, those layers are not thick enough to withstand the freeze-thaw actions that will occur at the site. CCCI should refer to the U.S. EPA's guidance manual "Evaluation Cover Systems for Solid and Hazardous Waste" SW-867. (320 IAC 4.1-28-4)
This document is available through the Government Printing Office, Superintendent of Documents, Washington D.C. 20402, Telephone AC 202/783-3238.

Subsection 4.5 - Schedule of Implementation

38. The plan provides a list of the closure activities and their sequence. However, a time frame for each activity is not provided. (320 IAC 4.1-21-3)

39. There is no commitment to the 90-day limit for treatment, removal, or disposal of hazardous wastes once the closure plan has been approved. (320 IAC 4.1-21-4)

Section 5.0 <u>Post-Closure Plan</u>

Subsection 5.1 - General

40. It must be stated that all post-closure monitoring and maintenance activities will continue for 30 years after the date of completing closure. (320 IAC 4.1-21-7)

Subsection 5.2 - Site Maintenance

41. It must be stated that post-closure use of the property will never be allowed to disturb the integrity of the final cover. (320 IAC 4.1-21-7)

Subsection 5.4 - Conclusion

A section similar to this should be added to include the following comments:

42. The post-closure plan must state that the owner/operator will amend the post-closure plan as 320 IAC 4.1-21-8(b), (e), and (f) specify.

43. The owner of this property must make a notation on the deed to this property as specified in 320 IAC 4.1-21-10.

Section 6.0 Cost Estimate

Subsection 6.1 - Closure Plan

44. In general, the plan does not provide a detailed cost estimate. More specifically, the plan does not include the unit cost for equipment, the distance for transportation for disposal of wastewater/cleaning waste, the hourly rate for the personnel, the estimated man hours for each activity, or the unit cost for disposal at each proposed disposal facility. (320 IAC 4.1-22-3)

45. As mentioned in Comment 37 above, the thickness of the capping material proposed by CCCI does not meet the recommended thickness. Therefore, the estimated cost associated with the capping material is low. (320 IAC 4.1-22-3)

46. The plan does not indicate the average depth or materials of the slurry wall; therefore, it is impossible to evaluate the estimated cost for the slurry wall. (320 IAC 4.1-22-3)

47. The plan does not provide the cost estimate for the disposal of cyanide and PCB's oil waste off-site, if they are not treatable on-site. (320 IAC 4.1-22-3)

Subsection 6.2 - Post-Closure Plan

48. CCCI proposes to get a waiver from the U.S. EPA to reduce the quarterly groundwater monitoring to yearly for years 2 to 30. The cost estimate for groundwater monitoring is based on that assumption. However, the plan does not include an alternate cost estimate in case the U.S. EPA does not grant the waiver. (320 IAC 4.1-22-3)

49. CCCI assumed that the U.S. EPA wells C3 and C4 may be used for post-closure groundwater monitoring. However, the post-closure plan lack contingencies for additional monitoring wells in case CCCI is not allowed to use these two wells. (320 IAC 4.1-21-7)

50. A mechanism of financial assurance for the closure and post-closure plans must be included. (320 IAC 4.1-22-4)

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May 6, 1987
File 6-3030

Mr. Terry F. Gray, Chief
Plan Review and Permit Section
Indiana Department of Environmental Management
105 S. Meridian Street
Indianapolis, IN 46225

RE: Response to Notice of Deficiency
Site Assessment and Closure Plan
Conservation Chemical Company of Illinois
IND 040888992

Dear Mr. Gray:

We apologize for the delay in our response to the notice of deficiency. However, due to the complex nature of this site, numerous parties involved, and level of detail required, our response has, of necessity, taken longer than the 30 days to complete.

Mr. Hjersted and his attorney, Mr. Rundio, have been most anxious for us to complete our response and have in no way slowed it. You may expect our completed responses within 2 to 3 days.

Very truly yours,
Atec Associates, Inc.

Steven Stanford

Steven Stanford
Geologist

John W. Weaver

John W. Weaver II, P.E.
Vice President

cc: Mr. Hak Cho, U.S. EPA, Region V
Ms. Sally Swanson, U.S. EPA, Region V
Mr. Louis Rundio, McDermott, Will and Emery
Mr. Norman Hjersted, CCCI

RECEIVED
MAY 11 1987
U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
HAZARDOUS WASTE ENFORCEMENT BRANCH

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1C
WASTE ANALYSIS PLAN

CCCI shall provide a waste analysis plan. This plan shall identify the on-site wastes by waste stream, basis for listing hazard, RCRA waste code, rational for RCRA waste code, and analytical identification. The form shall follow Table X, Waste Characteristics.

Table X
Waste Characteristics

Stream	Basis for Listing Hazard	Hazardous Waste	Physical Properties	Chemical Compensation (analysis)
Spent Solvent	TCE (Toxic)	F001	Specific gravity 1.27 to 1.41. Flash pt. 70°C to 80°C.	TCE: 65% to 80% by volume oil and grease 5% to 20% by volume.

CCCI shall provide a sampling plan to obtain the information required in the Waste Characteristics Table. The plan shall detail by tank, drum, vessel, container, soil, sediment, or sludge the methodology for sampling. At a minimum the waste determination of small quantity units, i.e., drums or less, shall be made using a field compatibility testing procedure should those units be in sufficient quantities to cause time delays through identification by a unit or individual sample and analysis procedure. Sections IC-3a and IC-3b are examples of more specific compatibility testing procedures that shall be implemented. Site specific situations not here foreseen shall expand, limit, or modify application of this procedure. CCCI shall substantiate through documentation and narrative the rationale should this procedure be selected.

1C-1
SAMPLE PLANNING

The objective of this plan is to determine the nature and level of contamination existing at the site. The sampling procedures shall be consistent with U.S. EPA guidance for sampling (SW-846 procedures). As part of this program, solid, semi-solid, or liquid samples shall be taken for analysis.

The term "sample" shall simply be defined as a representative part of the object to be sampled. This definition shall be qualified further by the consideration of several criteria.

1. To meet the requirement of representativeness, the sample shall be chosen so that it possesses the same qualities or properties as the material under consideration. The sample need only resemble the material to the degree determined by the desired qualities under investigation and the analytical techniques used.

2. Sample size shall be carefully chosen with respect to the physical properties of the entire object, the sampling plan, and the requirements and/or limitations of the analytical procedure.

3. Maintenance of the sample integrity shall be considered. The sample must retain the properties of the object at the time of sampling through collection, transport, and delivery to the laboratory. Degradation or alteration of the sample through exposure to air, excess heat, cold, or contaminants from the container must and shall be avoided.

4. Lastly, the number and/or frequency of subsamples (e.g., samples making up a composite) required and the distribution of those subsamples shall be considered. These criteria shall be dictated by the nature of the material being sampled; that is, whether the material is homogeneous or heterogeneous. For example, if a material is known to be homogeneous, a single sample may suffice to define its quality.

Before any sampling activities are began, the purpose and goals of the program and the equipment, methodologies, and logistics to be used during the actual sampling shall be identified in the form of a work or sampling plan. This plan shall be clean and concise and shall detail the following basic concepts:

--background information collected during the preliminary assessment;

--objectives and goals of the investigation;

--sampling methods to be used, including equipment needs, procedures, sample containment, and preservation;

--justification for selected methods and procedures;

--sample locations, as well as, number and types of samples to be collected;

--organization of the investigative team;

--safety plan (includes safety equipment and decontamination procedures, etc.);

--transportation and shipping information;

--training information; and

--additional site-specific information or requirements.

Note that this list of sampling plan components is by no means all inclusive and that additional elements shall be added or altered depending on the specific requirements.

SAMPLE COLLECTION

Field Sampling Operations

The sampling collection shall follow the sampling plan. The sample plan shall detail sample location and analysis parameters. Any deviations shall be noted by documentation.

Each sample or parameter set shall be obtained with clean equipment. Equipment for soil samples shall have been decontaminated by a referenced procedure. Monitoring well samples shall be sampled using bailers that have been steam cleaned prior to and between each sampling event. Each sample will be preserved in a manner appropriate to the specific parameter.

The field sampler shall fill out a field notebook. The field notebook and sample data sheets shall contain information pertinent to each sample, e.g., time, location, weather, analysis request. The sample shall be placed in a container with an identification label. A seal shall be attached in such a way that it shall be necessary to break it in order to open the sample container. The samples will then be refrigerated or placed on ice.

FIELD LOGBOOK

All information pertinent to a field activity shall be entered in a bound book with consecutively numbered pages. Entries in the logbook shall include at least the following:

--Date and time of entry.

--Purpose of sampling.

--Name and address of field contact (Federal, State, local representative).

--Type of process producing waste (if known).

--Type of waste (sludge, wastewater, etc.).

--Description of sample.

--Waste components and concentrations (if known).

--Number and size of sample taken.

--Description of sampling point.

--Date and time of collection of sample.

--Collector's sample identifictaion number(s) and/or name.

--References such as maps or photographs of the sampling site.

--Field observations.

--Any field measurements made such as pH, flammability, or explosiveness.

Because sampling situations vary widely, notes shall be as descriptive and inclusive as possible. Someone reading the entries shall be able to reconstruct the sampling situation from the recorded information. Language shall be objective, factual, and free of personal feelings or any other inappropriate terminology. If anyone other than the person to whom the logbook was assigned makes an entry, he/she must date and sign it.

Sampling Methods

At present, there are numerous accepted standardized methods for collecting environmental samples. Many of these methods are specified by industrial, governmental, or scientific organizations such as the American Society of Testing and Materials (ASTM). Examples of common publications that spell out specific sampling requirements for a particular analysis are Standard Methods for the Examination of Water and Wastewater, Methods for Chemical Analysis of Water and Waste and the User's Guide to the EPA Contract Laboratory Program. Sampling procedures can be found in Characterization of Hazardous Waste Sites--A Methods Manual, Volume II, Available Sampling Methods; Samplers and Sampling Procedures for Hazardous Waste Streams; and in the Federal Register. If there is conflicting information, employ the most recent U.S. Government method. CCCI shall use the above references to determine appropriate methods for the sampling plans. CCCI shall document the method chosen.

Limited information is available, and no universally accepted standardized methods have been devised for collecting of hazardous samples. Personnel collecting hazardous samples shall use protective clothing and equipment to minimize exposure. Often personal judgment and evaluation of each sampling situation combined with knowledge from previous experience must be used as the primary source of information for obtaining representative samples in a safe manner.

Sampling Equipment

Equipment to collect and contain hazardous samples shall be:

--Disposable or easily decontaminated. A collection device may be reused again only after thorough cleaning.

--Easy to operate, because personnel may be wearing cumbersome safety clothing and respiratory equipment.

--Nonreactive, so that it does not contaminate samples.

--Safe to use.

Sampling Technique

An important factor for maintaining consistent and representative samples is use of the same sampling technique. The same member of the work party shall collect all the samples of a particular type (member A collects all drum samples, member B collects all soil samples, member C collects all stream samples, etc.). These practices shall be implemented to ensure that data obtained from sample analyses are representative of the waste sampled and not a result of erratic sampling techniques.

SAMPLERS FOR LIQUID/SOLID HAZARDOUS MATERIALS

Category	Sampler
Liquids, slurries	Open tube (thief) COLIWASA Pond sampler Manual pump Powered pump Weighted bottle sampler Kemmerer sampler Extended bottle sampler Bacon bomb
Sludges, sediments	Open tube Thin-wall corer Gravity corer Ponar dredge
Powdered or granular solids	Grain sampler Trowel/scoop/spoon Posthole digger/shovel/pickax Split spoon sampler Veihmeyer sampler

Sample Labels

Each sample shall be sealed immediately after it is collected and labeled using waterproof ink. Labels shall be filled out prior to collection to minimize handling of the sample containers.

Occasionally, sample containers are marked in the field using an etching tool rather than immediately applying a sample label or tag. In this case, the data intended for the sample label shall be written into a sampling logbook and transcribed onto the label after the sample containers have been decontaminated.

The coordinator shall record the assignment of serial sample tags to field personnel in his/her logbook. All sample tags shall be accounted for. Lost, voided, or damaged tags shall immediately note in the logbook of the person to whom they were assigned.

Labels shall be firmly affixed to the sample containers. Tags attached by string shall be acceptable when gummed labels are not available or applicable. The container shall be made sufficiently dry enough for a gummed label to be securely attached.

The label shall include at least the following information:

--Name of collector.

--Date and time of collection.

--Place of collection.

--Sample number.

Sample Collection, Handling, and Identification

The number of persons involved in collecting and handling samples shall be kept to a minimum. Guidelines established for sample collection, preservation, and handling shall be used. Field records shall be completed at the time the sample is collected and shall be signed or initialed, including the date and time, by the sample collector(s). Field records shall contain the following information:

--Unique sampling or log number.

--Date and time.

--Source of sampling (including name, location, and sample type).

--Preservative used (if any).

--Analysis required.

--Name of collector(s).

--Pertinent field data (pH, DO, chlorine residual, etc.)

--Serial numbers on seals and transportation case.

One member of the sampling team shall be appointed field custodian. Samples shall be turned over to the field custodian by the team members who collected the samples. The field custodian shall document each transaction and the sample remains in his/her custody until it is shipped to the laboratory.

CHAIN-OF-CUSTODY PROCEDURES

The chain-of-custody shall be maintained for each sample or set of samples. Written procedures shall be available and followed whenever samples are collected, transferred, stored, analyzed, or destroyed. The primary objective of these procedures is to create an accurate written record which can be used to trace the possession and handling of the sample from the moment of its collection through analysis.

Transfer of Custody and Shipment

When transferring the samples, the transferee shall sign and record the date and time of the chain-of-custody record. Custody transfers made to a sample custodian in the field shall account for each sample, although samples may be transferred as a group. Every person who takes custody shall fill in the appropriate section of the chain-of-custody record. To minimize custody records, the number of custodians in the chain-of-possession shall be minimized.

The field custodian shall be responsible for properly packaging and dispatching samples to the appropriate laboratory. This responsibility includes filling out, dating, and signing the appropriate portion of the chain-of-custody record.

All packages sent to the laboratory shall be accompanied by the chain-of-custody record and other pertinent forms. A copy of these forms shall be retained by the originating office (either carbon or photocopy). Mailed packages shall be registered with return receipt requested. For packages sent by common carrier, receipts shall be retained as part of the permanent chain-of-custody documentation. Samples to be shipped shall be packed so as not to break and the package sealed or locked so that any tampering can be readily detected.

Laboratory Custody Procedures

The following procedures shall be followed by the laboratory:

1. All samples shall be handled by a minimum number of people.

2. The laboratory shall set aside a "sample storage security area." This is a clean, dry, cool, or refrigerated, isolated room which can be securely locked.

3. A specific person shall be designated custodian and an alternate designated to act in the custodian's absence. All incoming samples shall be received by the custodian, who shall indicate receipt by signing the accompanying chain-of-custody sheets.

4. The sample custodian shall maintain a bound log book to record, for each sample, the person delivering the sample, the person receiving the sample, date and time received, source of sample, sample identification or log number, how transported to the laboratory and condition received (sealed, unsealed, broken container, or other pertinent remarks). A standardized format will be established for log book entries.

5. The custodian shall ensure that heat-sensitive, light-sensitive samples, radioactive, or other sample materials having unusual physical characteristics, or requiring special handling, are properly stored and maintained prior to analysis.

6. The laboratory area shall be maintained as a secured area, restricted to authorized personnel only.

7. Laboratory personnel shall be responsible for the care and custody of the sample once it is handed over to them.

8. Once the sample analyses are completed, the samples may be discarded, with the concurrence of the generator after recording time and date in the log.

Custody Definition

A sample is in someone's "custody" if, it is in their actual physical possession, or, it is in their view, after being in their physical possession, or it is in their physical possession and locked up so that no one could tamper with it, or it is kept in a secred area restricted to authorized personnel only.

A COMPATIBILITY FIELD TESTING PROCEDURE FOR UNIDENTIFIED HAZARDOUS WASTES

These pages outline a field testing procedure for segregating unidentified hazardous waste with portable identification equipment. The compatibility classification scheme is base on pH, total organic vapors, oxidation potential, flammability, water reactivity, and radioactivity.

COMPATIBILITY TESTS

The primary purpose for the compatibility field test is to have a method for segregating uncharacterized drums or small quantities of waste into separate storage areas. The tests (Table 1) can be either performed at the staging area or at a mobile unit located within the site's "hot zone." This procedure's focus is to obtain rapid analysis and results in an expedited segragation operation. The selection criteria for the different categories is shown in Table II.

FLAMMABILITY

A simple flammability technique is used to separate flammables from non-flammables. Such a technique could simply consist of placing 2-5 ml representative hazardous waste sample in a disposable beaker. The beaker is placed in a large sand box and a propane torch is slowly passed over the unidentified waste. Ambient temperatures will affect the results, therefore, it is important to simulate ambient summertime temperature. If a flame is observed, then the sample is classified as flammable. A non-flammable classification is assigned to the waste after the torch has been passed over the waste several times.

RADIATION

Radiation monitoring should be one of the initial tests performed on unidentified hazardous waste containers and it should be performed as soon as possible to prevent worker exposure. Thus, the monitoring should be conducted as soon as containers are placed in the staging area and opened.

Since normal environmental gamma radiation background is approximately 0.01 to 0.02 milliroentgen per hour (mR/hr) on a gamma survey instrument, routine employee exposure should not be more than 2-3 times background levels. At no time should routine employee exposure be 10mR/hr or above without the advice of a qualified health physicist.

Ph

The Ph of a waste affects not only its corrosivity, but also iits compatibility with other wastes. If a barrel of acidic wastes were to leak and come in contact with a barrel of another waste containing a sulfide or cyanide, accelerated corrosion of the second drum would occur and the resultant co-mingling of the wastes would evolve poisonous hydrogen sulfide or hydrogen cyanide gas.

Table 1.
Compatibility Field Tests

Test	Category	Category
1. pH	Caustic (NF) Caustic (F) Acid (NF) Acid (F)	A B C D
2. Water Reactive		E
3. Oxidative/Reductive	Oxidizer (F) Oxidizer (NF)	F G
4. Radioactive		H
5. Volatile vapor/gas		
6. Flammable		

(F) Flammable
(NF) Non-flammable

Similarly, co-mingling of caustic wastes with ammonium salts or amine salts could lead to the evolution of irritant ammonia gas or amine vapors.

To guard against these possibilities, caustic and acid wastes must be segregated. It is widely accepted that both cyanide and sulfide ions must be kept above a pH of 9 in order to remain in aqueous solution. Therefore, caustic wastes (Categories A and B) shall be defined as those with a pH above 9, and acidic wastes (Categories C and D were defined as those with a pH below 9.

pH can be determined by a variety of colorimetric and electrochemical techniques, each of which has its disadvantages when used on "dirty" samples containing organic layers, sludges or concentrated solutions. [For instance, standard pH electrodes are easily fouled and require constant cleaning and recalibrating. Most colorimetric indicators and papers are easily obscured by grease, sludges or deeply colored solutions. Interferring chemicals may even cause false color changes.]

WATER REACTIVITY

[One purpose of hazardous waste segretation at a site or a spill is to ensure that antagonistic effects do not occur due to contact between incompatible wastes. While many hazardous substances at a scene may be relatively stable and compatible in a dry state, the high probability that water may contact these materials warrants consideration of the consequences of such an occurrence. Thus, water reactivity, aside from being among the characteristics identifying a solid waste as a hazardous waste is important in assessing the waste segregation strategy.]

"The characteristics of reactivity, as defined in the RCRA regulations (40 CFR 261.23), is exhibited if a representative sample of the waste has any of several properties. Properties 2, 3 and 4 of the material are of principal concern to this discussion:

2. It reacts violently with water

3. It forms potentially explosive mixtures with water

4. When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger of human health or the environment.

"The EPA laboratory manual, "Physical Chemical Methods for Evaluating Solid Waste," does not include a specific procedure for evaluating reactivity. The reason given is the diversified nature of the material properties listed in the regulation. In practice, however, water reactivity is commonly observed during the course of other tests. The dangers posed by the three properties above explain why water reactivity should be determined.

In routine hazardous waste management, established laboratory safety procedures and a general knowledge of waste composition are helpful in preventing a potential disaster due to the wetting of the reactive substance. Since the EPA proposed Comprehensive Hazardous Substance List contains 21 reactive chemical wastes and nine additional acutely hazardous chemical wastes, caution must be observed in the field.

Analytical safety precautions should be applied in the field where reactive substances are known to be present. Such items as ammonium picrate of fulminate of mercury should be segregated and perhaps not sampled if such materials are labeled or strongly presumed to be present. In questionable cases, however, a simple water reactivity screening test should be applied to check for the evaluation of heat or other violent reaction or the generation of toxic vapors.

The test should be relatively safe if precautions against explosion and toxic vapor hazards are taken. Unknown organic vapors, cyanide, hydrogen sulfide, chloride, ammonia and hydrogen cold be generated in small amounts. Hense, the strategy recommends the reactivty test be conducted after other waste characterization testing has been evaluated and some idea of the waste composition has been gained.

Briefly, the tests should be conducted as follows:

1. Place 500 ml distilled water in a one liter metal beaker in an explosition-proof hood, if available, or behind a substantial barrier. Analysts should wear appropriate protective gear.

2. Insert a thermometer in the beaker and record the temperature after equilibration.

3. Place an explosive atmosphere measuring device and an organic vapor measuring device in position to pick up any gases generated in the beaker headspace using laboratory clamps, etc.

4. Introduce about one gram (one ml) of waste to the beaker.

5. Observe the beaker measuring devices.

6. If no changes are observed in temperature or headspace gasesz, add an additional 4 grams (4 ml) of waste, added 1 gram (1 ml) at a time and recheck instruments.

7. If still no reaction is observed, add an additional 5 grams (5 ml).

   Wastes testing positive to water reactivity should be isolated and protected from rain or other water sources as well as possible. Complete confinement, however (i.e., enclosure in a walled building), is not recommended because of a possible explosion hazard from confining explosive vapors.

REDOX FIELD TEST KIT

The oxidation reduction (REDOX) potential field test kit was developed as a screening procedure for analyzing and classifying containers as those containing oxidizing or reducing agents at uncontrolled hazardous waste sites. The segregation of drums by REDOX potential is a necessary first step in a cleanup activity due to the danger of explosion associated with proximate storage or shipment of waste chemicals which have strong oxidizing or reducing properties. This hazard was demonstrated when approximately 40,000 drums containing chemical wastes exploded at the abandoned "Chemical Control Corporation" hazardous waste site in Elizabeth, New Jersey.

The REDOX Test Kit permits measurement of the REDOX potential of drum samples through use of a portable battery-operated instrument, electrode probes and electrolyte solutions. The measurement of oxidation-reduction potential (ORP) or Electromotive Force (EMF) of a sample solution can be performed with a platinum sensing electrode and a standard reference electrode, usually calomel or silver-silver chloride. Although the instrument and electrode probes are readily available, the unique feature of the Test Kit rests in its ability to perform REDOX measurements not only in aqueous but also organic matrices such as are found at hazardous waste sites. Operation of the kit involves using the electrolyte solutions to generate a known REDOX potential (EMF) and monitoring changes in the EMF caused by the addition of sample to the electroyle. The entire procedure for obtaining REDOX measurements requires only a few minutes and can be performed by inexperienced operators.

The feasibility of ORP measurements is based on the ability of the sensing electrode to generate and the meter to indicate, 10 mv or less change in potential. At very low concentrations, microgram quantities can cause measurable EMF changes. However, such sensitivity would mean that most tests would be positive. Therefore, it is preferable to use a standard test solution that will generate a known EMF, and monitor changes in the EMF caused by the addition of the sample. For example, a 0.001 N solution of ferrous ammonium sulfate will generate a cell potential of approximately 380 mv versus a silver-silver chloride reference electrode. When an oxidizing agent is added to the test solution, the Fe** of the ferrous ammonium sulfate will be oxidized to Fe***, raising the cell EMF.

The test is very sensitive and a reaction with only a small portion of an oxidizing agent will give a positive test. Failure to obtain a positive test would indicate an absence of any strong oxidizing agents. Potassium chromate can be used in place of the ferrous ammonium sulfate as a standard test solution for determining the presence of reducing agents.

The test kit consists of a portable pH meter capable of EMF measurements (Fisher Scientific Accuent Model 150, for example), and a platinum sensing combination electrode with a silver-silver chloride reference electrode. Two types of combination electrodes are currently used: Orion Model 96-78 and Fisher Scientific platinum REDOX electrodes. In addition, the kit contains 0.001 normal ferrous ammonium sulfate and 0.001 normal potassium chromate standard test solutions, measuring flasks, disposable 50 ml volume beakers, and disposable containers for taking sample measurements.

In the field, a chemical waste sample is added to a standard test solution and then the change in potential (mv) is measured with the pH meter and electrodes. Each standard test solution gives a constant reading. Changes in those readings either in the negative or positive direction upon addition of sample, indicates the presence of an oxidizing or reducing agent.

Thus by using the ferrous ammonium sulfate test solution, the standard reading with the silver-silver chloride reference electrode is 380 mv. A threshold change of 50 mv in the positive direction (over 430 mv) indicates the presence of oxidizing agents. The potassium chromate test solution gives a standard reading of 630 mv. A threshold change of 40 mv in the negative direction (less than 580 mv) indicates the presence of reducing agents.

VOLATILE VAPOR/GASES

The objective of taking total vapor concentration values just inside the barrel's bung hole is to assist in determining whether or not the headspace has a potentially explosive atmosphere. In utilizing total vapor concentrations as a guide for determining the presence of organic materials or explosion materials, a number of factors shold be considered:

1. The uses, limitations, and operating characteristics of the monitoring instrument must be recognized and understood. Instruments such as photoionizers and organic vapor analyzer (OVA) do not respond to all substances that may be present or may respond differently to identical substances when compared to one another.

*U.S. EPA, Hazardous Response Support Division

Table II
Selection Criteria for the Compatibility Field Testing Methods

Category	High pH9	Low pH9*	HNU or OVA on vapor space		Flam.	Redox	R/A	B/T
A-Caustic (NF)	-	-	-	-	-	-	-	-
B-Caustic (F)	+	-	+	+	+	-	-	-, +
C-Acid (F)	-	+	-	-	-	-	-	-
D-Acid (F)	-	+	+	+	+	-	-	-, +
E-Water Reactive	-	-	-	-	-	-	-	+
F-Oxidizers (F)	-	-	+	+	+	+	-	-
G-Oxidizers (NF)	-	-	-	-	-	+	-	-
H-Radioactives	-	-	-	-	-	-	+	-

*At pH9 the release of cyanide, sulfide and sulfide gases pose a threat.

(F) Flammable R/A Radioactivity
(NF) Non-Flammable B/T Beaker test for water reactivity

ANALYTICAL PARAMETERS AND METHODS

A. Analytical Parameters

1. Mandatory Specifications

a. All parameters listed in a Task must be analyzed or the Task will be considered not performed.

b. Analysis will be performed for the parameters listed. Detection levels to be used for this report must be given along with the results.*

c. Tasks to be performed.

D001
D002
D003
EPTOX
Total Metals
VOA
SVOA
TOX
PCBs
TOC

D001--	Ignitability--This task is to be performed as described in 40 CFR 261.21 and/or SW-846 Section 2.1.*
D002--	Corrosivity--This task is to be performed as described in 40 CFR 261.22 and/or SW-846, Section 2.1. Solids will be evaluated by taking the pH, using SW-846, method 9040, of a 10 percent (percent by weight) solution.
D003--	Reactivity--This task is to be performed as described in 40 CFR 261:22 and/or SW-846, Section 2.1. This requires testing for total cyanide and sulfide using methods from SW-846, and testing for total available cyanide and sulfide using the attached methods or their updates, as a minimum.
EPTOX--	Extraction Procedure Toxicity--This task is to be performed as described in 40 CFR 261 and SW-846, Section 2.1.*

Note: Solids (percent), as described in 40 CFR 261, Appendix II, must be determined in an 80-degree Centigrade oven. The extractor used must be equivalent to those shown in figures 1-3 of method 1310, and as described in Section 2.2 of SW-846. The method of standard additions is required. The following metals are required:

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selenium
Silver
Nickel

Total Metals-- This task includes the metals listed for EPTOX plus others, see monitoring parameters. Results are to be reported on a total dry weight basis (105-degree Centigrade oven). Methods of analysis must be from SW-846, using the method of standard additions.

PCBs-- Polychlorinated biphenyls--To be performed using SW-846 methods and dual column confirmation GC. Method 8250 may be substituted. Results are to be reported as PCB-1016, PCB-1242, PCB-1248, and PCB-1260.

VOA-- Volatile organic Analysis--This task must be analyzed using SW-846. The compounds to be tested for are as follows:

acetone acrolein acrylonitrile benzene
carbon-disulfide carbon tetrachloride
chlorobenzene 1,2-dichloroethane
1,1,1-trichloroethane 1,1-dichloroethane
1,1,2-trichloroethane chloroethane
chloroform 1,1,2,2-tetrachloroethane
2-chloroethylvinylether 1,1-dichloroethene
trans-1,2-dichloroethene
1,2-dichloropropane
cis-1,3-dichloropropene
trans-1,3-dichloropropene ethylbenzene
methylene chloride chloromethane
bromomethane bromoform
bromodichloromethane
fluorotrichloromethane

dichlorodifluoromethane
chlorodibromomethane 2-hexanone
paraldehyde methylethylketone
methylisobutylketone styrene
tetrachloroethylene toluene
trichloroethylene vinyl acetate vinyl
chloride o-xylene m-xylene p-xylene

SVOA-- Semi-Volatile Organics Analysis--This task must be analyzed using SW-846. The compounds to be tested are as follows:

2,4,6-trichlorophenol p-chloro-m-cresol
2-chlorophenol 2,4-dichlorophenol
2,4-dimethylphenol 2-nitrophenol
4-nitrophenol 2,4-dinitrophenol
4,6-dinitro-2-methylphenol
pentachlorophenol phenol
tetrachlorophenol benzoic acid
2-methylphenol 4-methylphenol
2,4,5-trichlorophenol

acenaphthene benzidine
1,2,4-trichlorobenzene hexachlorobenzene
hexachloroethane bis(2-chloroethyl)ether
2-chloronaphthalene 1,2-dichlorobenzene
1,3-dichlorobenzene 1,4-dichlorobenzene
3,3'-dichlorobenzidine 2,4-dinitrotoluene
2,6-dinitrotoluene 1,2-diphenylhydrazine
fluorathene hexachlorobutadiene
isophorone 4-chlorophenyl phenyl ether
naphthalene nitrobenzene
hexachlorocyclopentadiene
N-nitrosodiphenylamine
N-nitrosodipropylamine 4-bromophenyl phenyl
ether benzylbutyl phthalate di-n-butyl
phthalate bis (2-ethylhexyl)phthalate
di-n-octyl phthalate diethyl phthalate bis
(2-chloroisopropyl) ether dimethyl
phthalate benzo(a)anthracene bis
(2-chloroethoxy) methane benzo(a)pyrene
benzo(b)fluoranthene benzo(k)fluoranthene
chrysene acenaphthylene anthracene
benzo(ghi)perylene

fluorene phenanthrene
dibenzo(a,h)anthracene
indeno(1,2,3-cd)pyrene pyrene aniline
benzyl alcohol 4-chloroaniline
dibenzofuran 2-methylnaphthalene
2-nitroaniline 3-nitroaniline
4-nitroaniline carbazole pyridine
dinitrobenzene 2-picoline
tetrachlorobenzene(s) toluenediamine

aldrin chlorodane dieldrin 4,4'-DDD
4,4'-DDe 4,4'-DDT alpha-endosulfan
beta-endosulfan endosulfan sulfate endrin
endrin aldehyde heptachlor heptachlor
eposide alpha-BHC beta-BHC gamma-BHC
delta-BHC(lindane) methoxychlor toxaphene
PCB-1016 PCB-1242 PCB-1248 PCB-1254
PCB-1260

d. All analyses shall be peformed on a total basis of the sample as received (with the exception of the EP Toxicity Procedures when required) and reported in the same manner. Exceptions to this will be those previously stated for the Total Metals analysis.

B. Analytical Methods

1. Mandatory Specifications

a. All analysis shall be performed using analytical procedures available in the following publications or their updates, unless specifically stated otherwise in this Appendix. Analytical procedures refers to the sample preparation techniques as well as the actual test procedures. The specific analytical procedures utilized shall be listed in the proposal.*

"Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, July 1982

REQUIREMENTS FOR GROUNDWATER MONITORING SAMPLES

Task Number	Parameter	Required Detection Limit	Method*
1	Arsenic	25 ug/L	A, B, C
	Barium	500 ug/L	A, B, C
	Cadmium	5 ug/L	A, B, C
	Chromium	25 ug/L	A, B, C
	Lead	25 ug/L	A, B, C

Task Number	Parameter	Required Detection Limit	Method*
	Mercury	1 ug/L	A, B, C
	Nickel	25 ug/L	A, B, C
	Selenium	5 ug/L	A, B, C
	Silver	25 ug/L	A, B, C
2	Chloride	1 mg/L	A
	Iron	0.1 mg/L	A, C
	Manganese	0.025 mg/L	A, C
	Phenols	0.005 mg/L	A
	Sodium	1.0 mg/L	A, C
	Sulfate	5.0 mg/l	A
	Total Solids	10 mg/l	A
	Total Dissolved Solids	10 mg/l	A
	Nitrate (as N)	0.1 mg/l	A
	Fluoride	0.05 mg/l	A
	Copper	1 mg	A
	Zinc	0.005 mg/l	A
3	pH	0.1 Std Units	A
	Specific Conductance	5.0 Std Units	A
	Total Organic Carbon (TOC)	1.0 mg/L	A
	Total Organic Halogen (TOX)	0.05 mg/L	B
	Total Residue	1.0 mg/L	A, B
4	Total Cyanide	5.0 ug/L	A, B
	Total Sulfide	1.0 mg/L	A, B
5	VOAs	10 ug/L	C, 624
6	SVOAs	10 ug/L	C, 625

*A-- Methods for Chemical Analysis of Water and Wastes," EPA No. 600/4-79-020, March 1979.
*B-- "Test methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, July 1982.
*C-- Methods 624, 625, and Appendix C (ICP) as proposed in the Federal Register on October 26, 1984.
*D-- EPA Methods 601 - 613 For Analysis by Gas Chromatography

REQUIRED METHODS FOR ANALYSIS

Parameter	SW-846 Method Number	Indiana Method Number
Ignitability	1010	1010
Corrosivity	9040	9040
Reactivity	*	*
EP Toxicity	1310	1310
Antimony	7040	7040
Arsenic	7060	7060
Barium	7080	7080
Cadmium	7130	7130
Chromium	7190	7190
Chromium, Hexavalent	7195, 7196, 7197	7195, 7196, 7197
Lead	7420	7420
Mercury	7470, 7471	7470, 7471
Nickel	7520	7520
Selenium	7740	7740
Silver	7760	7760
Halogenated Volatile Organics	8010	8010
Nonhalogenated Volatile Organics	8015	8015
Aromatic Volatile Organics	8020	8020
Acrolein, Acrylonitrile, Acetonitrile	8030	8030
Phenols	8040	8040
Phthalate Esters	8060	8060
Organochlorine Pesticides and PCBs	8080	8080
Nitroaromatics and Cyclic Ketones	8090	8090
Polynuclear Aromatic Hydrocarbons	8100	8100
Chlorinated Hydrocarbons	8120	8120
Organophosphorus Pesticides	8140	8140
Chlorinated Herbicides	8150	8150
Volatile Organics (GC/MS) (See Table 1-2 for listing)	8240	8240
Semi Volatile Organics (GC/MS) (See Table 1-3 for listing)	8270	8270
Total and Amenable Cyanide	9010	9010
TOX	9020	9020
Sulfides	9030	9030
pH	9040	9040
<u>Sample Preparation</u> - Metals		
Acid Digestion Procedure for Flame Atomic Absorption Spectroscopy	3010	3010

* See D003, SW 846

Parameter	SW-846 Method Number	Indiana Method Number
Acid Digestion of Oils, Greases, or Waxes	3030	3030
Dissolution Procedures for Oils, Greases, or Waxes	3040	3040
Acid Digestion of Sludges	3050	3050
Alkaline Digestion	3060	3060
Fusion Procedure for Solid Samples	--	3065
Sample Preparation-Organics		
Separatory Funnel Liquid-Liquid Extraction	3510	3510
Continuous Liquid-Liquid Extraction	3520	3520
Acid-Base Cleanup Extraction	3530	3530
Soxhlet Extraction	3540	3540
Sample Introduction-Organics		
headspace	5020	5020
Purge and Trap	5030	5030

Compounds detected as volatile organics and semi-volatile organics are listed in Part 261, Appendix VIII.

ANALYTICAL REQUIREMENTS

The laboratory analyzing samples shall be consulted before they are collected to ensure that the laboratory's analytical needs are met and that the appropriate types of samples are taken for a good quality assurance/quality control (QA/QC) program.

The analyses to be done shall require specific sample handling and preservation procedures and also shall require specific sample container types, volumes, and numbers. Samples collected, handled, and preserved incorrectly, or of insufficient volume or number are of little or no value. There shall be prior consultation with the laboratory regarding these issues to minimize later analytical problems and maximize data validity.

QA/QC SAMPLE REQUIREMENTS

Multiple Samples

Multiple samples shall be collected. These additional samples are essential to the quality control aspects of the project and may also assist in reducing costs associated with resampling brought about by container breakage, errors in the analytical procedure, and data confirmation. The following is a list of the types of multiple samples required.

-- Duplicate samples: Duplicate or multiple samples are essentially identical. These samples shall be collected at the same time, at exactly the same location, with the same apparatus, and into identical containers prepared in the same way, and filled to the same volume. All duplicate samples shall be preserved and handled identically. The analysis of duplicate samples using the same procedure and instrument provides an indication of analytical variability and error.

-- Spiked samples (aqueous): For this sample type, a known quantity of the contaminant of interest is added to a sample at concentrations where the analytical method is known to be accurate. Hazardous constituent samples shall only be spiked in the laboratory.

-- Blank samples: A sample blank is a sample of distilled-deionized, contaminant-free water, rinsed collection devices, or sampling media that is collected, containerized, treated (if appropriate), and handled in the same manner as the samples. Blanks shall be used as an indicator of sample contamination throughout the entire process.

Duplicate and blank samples shall be collected during the sampling program. In general, two duplicates and one blank shall be prepared for every 20 composite samples (aqueous, dreg, soil, sludge or oil) collected.

Duplicate aqueous, dreg, soil, sludge, and oil (if applicable) samples shall be obtained by simultaneously filling two sets of sample bottles using standard sampling equipment and procedures. The duplicates shall be treated as separate samples for labeling and shipping purposes. Duplicate samples shall be logged as such in the field log book.

Blank samples shall be prepared using diatomaceous earth for all dreg samples except for the inorganic analyses. Distilled water blanks shall be used for all aqueous samples and for the inorganic portion of the dreg analyses. A PCB free oil shall be used as a blank for any oil samples collected. Standard sampling equipment and procedures shall be used for blank preparation. Blank samples shall be treated as separate samples for purposes of identification, logging, and shipping.

Container Types

The most important factors to consider when choosing containers for hazardous materials samples are compatibility, resistance to breakage, and volume. Containers shall be selected according to laboratory requirements and 40 CFR 136 Table II.

LABORATORY REPORTING

CCCI shall provide the following Data Validation to IDEM:

Documentation for examination of at least five percent of the raw data (e.g., chromatograms, AAS recorder outputs, blanks, spikes, duplicates) for the state QA/QC reviewer or her/his designee to verify the adequacy of documentation and analytical performance.

Documentation confirming the goals for precision and accuracy on duplicate samples, reference compounds, and spiked samples shall be met.

QUALITY ASSURANCE/QUALITY CONTROL MEASURES

1. Mandatory Specifications

   a. It is the responsibility of CCCI to properly collect and field preserve all samples. It is CCCI's responsibility to perform analysis within the specified time limits. The specified time limits are as follows.* Refer to 40 CFR 136 for details.

   b. It is CCCI's responsibility to follow the procedures as outlined in the specific methods as they relate to the areas of calibration and quality control. If a method uses the word "should" in the quality control section, it is to be interpreted as "shall" when related to the laboratory's responsibility.

   c. The mass spectra for either decafluorotriphenylphosphine (DFTPP) or bromofluorobenzene (BFB) must meet the abundance criteria in the method utilized for organic analysis.*

   d. For inorganic analysis a method blank and a sample replicate must be analyzed with every run or every 20 samples. For organic analysis, a method blank and a sample replicate must be analyzed with every run or every 10 samples. A method blank is a distilled, distilled and deionized, or organic free water sample taken through the entire procedure step by step, including all of the reagents and solvents, in the quantity required by the method. Distilled water used must meet the specific method requirements. Sample replicates are samples that are divided into two or more portions and all portions analyzed by the same procedure.

   e. Sample results shall not be corrected for any reason other than automatic background correction performed by the instrumentation involved in the analysis.

   f. All analytical results for method blanks, lab replicates, matrix spikes, and reference standards (SRMs) or other fortified samples shall be forwarded when completed to the IDEM. Please note the samples to which these results would correspond. Xerox copies of these analytical results shall be acceptable. A matrix spike is a submitted sample having known concentrations of one or more required parameters added to it prior to sample preparation and analysis (this is usually done to a split sample to validate recovery in the sample matrix). A standard addition is the addition of one or more required parameters to a sample immediately preceding the measurement procedure.

(*See cover page of IC-4.)

g. CCCI must use these surrogate compounds for organic analysis for each sample fraction as applicable or identify and justify the use of other surrogate compounds to the satisfaction of the Project Coordinator (PC).

Volatile organics:	D8-Toluene, BFB, D4-1,2-Dichloroethane
Semi-volatile and Pesticide:	D5-Nitrobenzene 2-Fluorobiphenyl Pentafluorophenol Decafluorobiphenyl D5-Phenol 2-Fluorophenol 2,4,6,-Tribromophenol Dibutylonlorendate

h. Whenever the analytical procedure is "out-of-control," the problem must be found, corrected, and the analysis repeated. Analytical results reported when the procedure is operating "out-of-control" will be refused by IDEM unless narrative explanation accompanies. Written explanation may be given only in those situations where the sample cannot be analyzed again due to insufficient amount of sample remaining or a proper justification can be made using precision and accuracy data obtained by the method. The analytical procedure is to be considered "out-of-control" when any of the following occur.

1. Whenever the method blank results exceeds the detection limit required for the Tasks.

2. Whenever one lab replicate varies by more than thirty percent (30 percent) of the other.

3. Whenever matrix spikes, reference standards, or other laboratory fortified samples results fall outside of the range of 70 percent to 130 percent of true value.

4. Whenever surrogate recoveries fall outside of the range of 70 percent to 130 percent of true value.

i. All samples shall be stored in a separate storage area accessed by authorized personnel only. Access to samples must be restricted to authorized personnel at all times.

j. Non-attainment of detection levels as given elsewhere in this document without the written approval of the PC shall be basis for refusal of reports.

k. Contractor shall submit representative precision and accuracy data for each method to be used in CCCI's laboratory documentation.

2. <u>Desirable Specifications</u>

a. The IDEM recommends that the laboratory use internal standards as opposed to external standards for analysis of all organics.

1F
GROUNDWATER
SAMPLING AND ANALYSIS

Conservation Chemical Company of Illinois (CCCI) shall prepare and implement a written groundwater sampling and analysis (S&A) plan. The CCCI plan must include procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, and chain-of-custody control.

CCCI shall install a minimum of two off-site (i.e., not within the boundaries of the proposed slurry wall) upgradient monitoring well nests. These wells shall be located (vertically and laterally) far enough from the CCCI facility as to not be affected hydrologically and/or contaminated by the CCCI facility. These monitoring wells, and future monitoring wells, shall be screened in upper, middle, and lower portions of the uppermost aquifer and any interconnected aquifers. These monitoring wells shall be immediately sampled following well development and have their groundwater samples analyzed.

CCCI shall conduct groundwater sampling according to sample planning IC-1, sample collection IC-2, groundwater sampling requirements IF, analysis IC-4, and reporting and QC/QA in IC-5.

CCCI shall construct and submit static water level maps as described in Section II, D.6.

CCCI field sampling personnel shall follow the written plan.

CCCI shall employ proper well evacuation techniques.

CCCI shall not employ improper sampling equipment that may alter chemical constituents in ground water.

CCCI shall not employ improper sampling techniques that may alter chemical composition of samples, particularly in regard to stripping of volatile organic compounds in samples.

CCCI field facility personnel shall use field blanks, chemical standards, and chemically spiked samples to identify changes in sample quality after collection.

CCCI field personnel shall properly clean nondedicated sampling equipment after use.

CCCI field personnel shall not place sampling equipment (rope, bailer, tubing) on the ground where it can become contaminated prior to use.

CCCI field personnel shall document their field activities (e.g., keep sampling logs).

CCCI field personnel shall follow proper chain-of-custody procedures.

CCCI shall provide QA/QC protocol (field and laboratory).

Elements of Sampling and Analysis Plans

The CCCI groundwater S&A plan shall specifically address these elements.

a. Sample collection for tasks one through six as cited in Specifications for Laboratory Services, Groundwater Monitoring Samples List;

b. Sample preservation and handling;

c. Chain-of-custody control;

d. Analytical procedures; and

e. Field and laboratory quality assurance/quality control.

Sample Collection

Measurement of Static Water Level Elevation

The sampling and analysis plan shall include provisions for measurement of static water elevations in each well prior to each sampling event. The S&A plan shall specify the device to be used for water level measurements, as well as the procedure for measuring water levels.

CCCI's field measurements shall include depth to standing water and total depth of the well to the bottom of the intake screen structure. The measurements shall be taken to 0.01 foot. Each well shall have a permanent, easily identified reference point from which its water level measurement is taken. The reference points shall be established by a licensed surveyor and typically located and marked at the top of the well casing with locking cap removed or on the apron; and, where applicable, a protective casing. The reference points shall be established in relation to an established National Geodetic Vertical Datum (NGVD). A steel tape will usually suffice, however. Whenever nondedicated equipment is used, procedures shall be instituted to ensure that the sample is not contaminated. Equipment shall be constructed of inert materials and decontaminated prior to use at another well.

Detection of Immiscible Layers

The CCCI S&A plan shall include provisions for detecting immiscible contaminants (i.e., "floaters" and "sinkers"). The S&A plan shall specify the device to be used to detect light phases and dense phases, as well as the procedures to be used for detecting and sampling these contaminants.

Owner/operators shall follow the procedures below for detecting the presence of light and/or dense phase immiscible organic layers. These procedures shall be undertaken before the well is evacuated for conventional sampling:

1. Remove the locking and protective caps.

2. Sample the air in the well head for organic vapors using either a photoionization analyzer or an organic vapor analyzer, and record measurements.

3. Determine the static liquid level using a manometer and record the depth.

4. Lower an interface probe into the well to determine the existence of any immiscible layer(s), light and/or dense.

Well Evacuation

The water standing in a well prior to sampling may not be representative of in-situ groundwater quality. Therefore, the CCCI shall remove the standing water in the well and filter pack so that formation water can replace the stagnant water. The owner/operator's S&A plan shall include detailed, step-by-step procedures for evacuating wells. The equipment the owner/operator plans to use to evacuate wells shall also be described.

The CCCI S&A plan evacuation procedure shall ensure that all stagnant water is replaced by fresh formation water upon completion for the process. The approach shall allow drawing the water down from above the screen in the uppermost part of the water column in high yield formations to ensure that fresh water from the formation will move upward in the screen. In low-yield formations, water shall be purged so that it is removed from the bottom of the screened interval.

The procedure used for well evacuation shall depend on the hydraulic yield characteristics of the well. When evacuating low-yield wells (wells that are incapable of yielding three casing volumes), the owner/operator shall evacuate wells to dryness once. As soon as the well recovers sufficiently, the first sample shall be tested for pH, temperature, and specific conductance. Samples shall then be collected and containerized in the order of the parameters' volatilization sensitivity. The well shall be retested for pH, temperature, and specific conductance after sampling as a measure of purging efficiency and as a check on the stability of the water samples over time. Whenever full recovery exceeds two hours, CCCI shall extract the sample as soon as sufficient volume is available for a sample for each parameter. At no time shall an owner/operator pump a well to dryness if the recharge rate causes the formation water to vigorously cascade down the sides of the screen and causes an accelerated loss of volatiles. CCCI shall anticipate this problem and purge three casing volumes from the well at a rate that does not cause recharge water to be excessively agitated. For higher yielding wells, the owner/operator shall evacuate three casing volumes prior to sampling.

When purging equipment must be reused, it shall be decontaminated, following the same procedures required for the sampling equipment. Clean gloves shall be worn by the sampling personnel. Measures shall be taken to prevent surface soils from coming in contact with the purging equipment and lines, which in turn could introduce contaminants to the well. Purged water shall be collected and screened with photoionization or organic vapor analyzers, pH, temperature, and conductivity meters. If these parameters and facility background data suggest that the water is hazardous, it shall be drummed and disposed of properly.

Sample Withdrawal

The technique used to withdraw a groundwater sample from a well shall be selected based on a consideration of the parameters to be anlayzed in the sample. In order to minimize the possibility of sample contamination, the owner/operator shall:

Use only fluorocarbon resin or stainless steel sampling devices, and

Use dedicated samplers for each well. (If a dedicated sampler is not available for each well, the owner/operator shall thoroughly clean the sampler between sampling events, and shall take blanks and analyze them to ensure cross-contamination has not occurred.)

The S&A plan shall specify the order in which samples are to be collected. Samples shall be collected and containerized in the order of the volatilization sensitivity of the parameters. A preferred collection order for some common groundwater parameters follows:

--Volatile organics (VOA)

--Purgeable organic carbon (POC)

--Purgeable organic halogens (POX)

--Total organic halogens (TOX)

--Total organic carbon (TOC)

--Extractable organics

--Dissolved metals

--Total metals

--Phenols

--Cyanide

--Sulfate and chloride

--Turbidity

--Nitrate and ammonia

--Radionuclides

Temperature, pH, and specific conductance measurements shall be made in the field before and after sample collection as a check on the stability of the water sampled over time. The S&A plan shall also specify in detail the devices the owner/operator will use for sample withdrawal. The plan shall state that devices are either dedicated to a specific well or are capable of being fully disassembled and cleaned between sampling events. Procedures for cleaning the sampling equipment shall be included in the plan. Any special sampling procedures that the owner/operator must use to obtain samples for a particular constituent (e.g., TOX or TOC) shall also be described in the plan.

Check valves shall be designed and inspected to assure that fouling problems do not reduce delivery capabilities or result in aeration of the sample.

Sampling equipment (e.g., especially bailers) shall never be dropped into the well, because this will cause degassing of the water upon impact.

The contents shall be transferred to a sample container in a way that will minimize agitation and aeration.

Clean sampling equipment should not be placed directly on the ground or other contaminated surfaces prior to insertion into the well.

When dedicated equipment is not used for sampling (or well evacuation), the CCCI sampling plan shall include procedures for disassembly and cleaning of equipment before each use.

If the constituents of interest are inorganic, the equipment shall be cleaned with a nonphosphate detergent/soap mixture. The first rinse should be a dilute (0.1 N) hydrochloric acid or nitric acid, followed by a rinse of tap water and finally Type II reagent grade water. Dilute hydrochloric acid shall be preferred to nitric acid when cleaning stainless steel.

When organics are the constituents of concern, the CCCI shall wash equipment with a nonphosphate detergent and rinse with tap water, distilled water, acetone, and pesticide-quality hexane, in that order. The sampling equipment shall be thoroughly dried before use to ensure that the residual cleaning agents (e.g., HCl) are not carried over to the sample. The CCCI shall sample background wells first and then proceed to downgradient wells.

When collecting samples where volatile constituents or gases are of interest using a positive gas displacement bladder pump, pumping rates shall not cause turbulence.

In-Situ or Field Analyses

Several constituents of the parameters being evaluated are physically or chemically unstable and shall be tested either in the borehole using a probe (in-situ), or immediately after collection using a field test kit. Examples of unstable elements or properties include pH, redox potential, chloride, dissolved oxygen, and temperature. Specific conductance shall be included also.

CCCI shall complete the calibration of any in-situ monitoring equipment or field-test probes and kits at the beginning of each day's activity according to the manufacturer's specifications and consistent with Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (SW-846), Second Edition, 1982.

Sample Preservation and Handling

Many of the chemical constituents and physiochemical parameters that are to be measured or evaluated in groundwater monitoring programs are not chemically stable and, therefore, sample preservation is required. Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (SW-846) includes a discussion by analyte of the appropriate sample preservation procedures. [In addition, 40 CFR 136 Table 11 specifies the sample containers that the CCCI shall use for each constituent or common set of parameters.] CCCI shall identify in the S&A plan what preservation methods and sample containers will be employed.

Improper sample handling may alter the analytical results of the sample. Samples shall be transferred in the field from the sampling equipment directly into the container that has been specifically prepared for that analysis or set of compatible parameaters.

CCCI shall not composite in a common container in the field and then split in the laboratory, or pour first into a wide mouth container and then transfer into smaller containers.

The S&A plan shall specify how the samples for volatiles will be transferred from the sample collection device to the sample container in order to minimize loss through agitation/volatilization.

Sample Containers

The owner/operator's S&A plan shall identify the type of sample containers to be used to collect samples, as well as the procedures that CCCI shall use to ensure that sample containers are free of contaminants prior to use.

When metals are the analytes of interest, fluorocarbon resin or polyethylene containers with polypropylene caps should be used. When organics are the analytes of interest, glass bottles with fluorocarbon resin-lined caps shold be used.

Containers shall be cleaned based on the analyte of interest. When samples are to be analyzed for metals, the sample containers as well as the laboratory glassware shall be thoroughly washed with nonphosphate detergent and tap water, and rinsed with (1:1) nitric acid, tap water, (1:1) hydrochloric acid, tap water, andx finally Type II water, in that order.

Similarly, an EPA-approved procedure is available for cleaning containers used to store samples for organics analysis. The sampling container shall be emptied of any residual materials, followed by washing with a nonphosphate detergent in hot water. It shall then be rinsed with tap water, distilled water, acetone, and finally with pesticide-quality hexane. The use of chromic acid can cause a contamination problem and shall be avoided if chromium is an analyte of interest. Glassware shall be sealed and storeed in a clean environment immediately after drying or cooling to prevent any accumulation of dust or other contaminants. The cleanliness of a batch of new or precleaned bottles should be verified in the laboratory.

Sample Preservation

The CCCI S&A plan shall identify sample preservation methods. A summary list of appropriate sample container types and sample preservation measures is presented in 40 CFR 136 Table II.

Special Handling Considerations

Samples requiring analysis for organics will not be filtered. Organic samples shall not be transferred from one container to another. Total organic halogens (TOX) and total organic carbon (TOC) samples shall be handled and analyzed as materials containing volatile organis. No headspace shall exist in the sample containers to minimize the possibility of volatilization of organics. Field logs and laboratory analysis reports shall note the headspace in the sample container(s) at the time of receipt by the laboratory, as well as the time the sample was first transferred to the sample container at the wellhead.

Groundwater samples on which metals analysis will be conducted shall be filtered through a 0.45-micron membrane filter, transferred to a bottle, preserved with nitric acid to a pH less than two (Table 4-1), and analyzed for dissolved metals.

Chain-of-Custody/Sample Documentation

CCCI shall describe a chain-of-custody program in the S&A plan. An adequate chain-of-custody program shall allow for the tracing of possession and handling of individual samples from the time of field collection through laboratory analysis. A chain-of-custody program shall include:

Sample labels, which prevent misidentification of samples;

Sample seals to preserve the integrity of the sample from the time it is collected until it is opened in the laboratory;

Field logbook to record information about each sample collection during the groundwater monitoring program;

Chain-of-custody record to establish the documentation necessary to trace sample possession from the time of collection to analysis;

Sample analysis request sheets, which serve as official communication to the laboratory of the particular analysis(es) required for each sample and provide futher evidence that the chain-of-custody is complete; and

Laboratory logbook and analysis notebooks, which are maintained at the laboratory and record all pertinent information about the sample.

Sample Labels

To prevent misidentification of samples, CCCI shall affix legible labels to each sample container. The labels shall be sufficiently durable to remain legible even when wet and should contain the following types of information:

--Sample identification number;

--Name of collector;

--Date and time of collection;

--Parameter(s) requested (if space permits);

--Internal temperature of shipping container at time the sample was placed--lab results or chain-of-custody; and

--Internal temperature of shipping container upon opening at laboratory.

Sample Seal

In cases where samples may leave the CCCI's immediate control, such as shipment to a laboratory by a common carrier (e.g., air freight), a seal shall be provided on the shipping container or individual sample bottles to ensure that the samples have not been disturbed during transportation.

Field Logbook

CCCI or the individual designated to perform groundwater monitoring operations shall keep an up-to-date field logbook that documents the following:

--Identification of well;

--Well depth;

--Static water level depth and measurement technique;

--Presence of immiscible layers and detection method;

--Well yield--high or low;

--Purge volume and pumping rate;

--Time well purged;

--Collection method for immiscible layers and sample identification numbers;

--Well evacuation procedure/equipment;

--Sample withdrawal procedure/equipment;

--Date and time of collection;

--Well sampling sequence;

--Types of sample containers used and sample identification numbers;

--Preservative(s) used;

--Parameters requested for analysis;

--Field analysis data and method(s);

--Sample distribution and transporter;

--Field observations on sampling event;

--Name of collector;

--Climatic conditions including air temperature; and

--Internal temperature of field and shipping (refrigerated) containers.

Chain-of-Custody Record

To establish the documentation necessary to trace sample possession from time of collection, a chain-of-custody record shall be filled out and shall accompany every sample. The record shall contain the following types of information:

--Sample number;

--Signature of collector;

--Date and time of collection;

--Sample type (e.g., groundwater, immiscible layer);

--Identification of well and have the lab number assigned to the number of containers;

--Parameters requested for analysis on the chain-of-custody;

--Signature, time and dates of person(s) involved in the chain of possession

--Inclusive dates of possession

Sample Analysis Request Sheet

This document should accompany the sample(s) on delivery to the laboratory and clearly identify which sample containers have been designated (e.g., use of preservatives) for each requested parameter. The record should include the following types of information:

--Name of person receiving the sample;

--Laboratory sample number (if different from field number);

--Date of sample receipt;

--Analyses to be performed; and

--Internal temperature of shipping (refrigerated) container upon opening in the laboratory.

Laboratory Logbook

Once the sample has been received in the laboratory, the sample custodian and/or laboratory personnel shall clearly document the processing steps that are applied to the sample. All sample preparation techniques (e.g., extraction) and instrumental methods shall be identified in the logbook. Experimental conditions, such as the use of specific reagents (e.g., solvents, acids), temperatures, reaction times, and instrument settings, shall be noted. The results of the analysis of all quality control samples shall be identified specifric to each batch of groundwater samples analyzed. The laboratory logbook shall include the time, date, and name of person who performed each processing step.

Analytical Procedures

The S&A plan shall describe in detail the analytical procedures that will be used to determine the concentrations of constituents or parameters of interest. These procedures shall include suitable analytical methods as well as proper quality assurance and quality control protocols.

The required precision, accuracy, detection limits, and percent recovery (if applicable) specifications should be clearly identified in the plan.

The S&A plan shall identify one method that will be used for each specific parameter or constituent. The plan shall specify a method in SW-846 or an EPA-approved method, and clearly indicate if there are going to be any deviations from the stated method and the reasons for these deviations.

Records of groundwater analyses shall include the methods used, extraction date, and date of actual analysis. Data from samples that are not analyzed within recommended holding times will be considered suspect.

Field and Laboratory Quality Assurance/Quality Control

One of the fundamental responsibilities of CCCI is the establishment of continuing programs to ensure the reliability and validity of field and analytical laboratory data gathered as part of the overall groundwater monitoring program.

The CCCI S&A plan shall explicitly describe the QA/QC program that will be used in the field and laboratory. In these cases, it is the owner/operator's responsibility to ensure that the laboratory of choice is exercising a proper QA/QC program. The CCCI program described in the S&A plan shall be used by the laboratory analyzing samples.

Field QA/QC Program

The owner/operator's S&A plan shall provide for the routine collection and analysis of two types of AC blanks: trip blanks and equipment blanks. Each time a group of bottles is prepared for use in the field, one bottle of each type (e.g., glass, fluorocarbon resin, polyethylene) shall be selected from the batch and filled with deionized water. The bottles filled with the blank shall be transported to the sampling location and returned to the laboratory in a manner identical to the handling procedure used for the samples. These trip blanks shall be subjected to the same analysis as the ground water. The concentration levels of any contaminants found in the trip blank shall not be used to correct the grounwater data. The contaminant levels shall be noted, and if the levels are not within an order of magnitude when compared to the field sample results, the CCCI shall resample the groundwater.

Various types of field blanks shall be used to verify that the sample collection and handling process has not affected the quality of the samples. The owner/operator shall prepare each of the following field blanks and analyze them for all of the required monitoring parameters:

Trip Blank--Fill one of each type of sample bottle with Type II reagent grade water, transport to the site, handle like a sample, and return to the laboratory for analysis. One trip blank per sampling event is required.

Equipment Blank--To ensure that the nondedicated sampling device has been effectively cleaned (in the laboratory or field), fill the device with Type II reagent grade water or pump Type II reagent grade water through the device, transfer to sample bottle(s), and return to the laboratory for analysis. A minimum of one equipment blank for each day that groundwater monitoring wells are sampled is required.

The results of the analysis of the blanks shall not be used to correct the groundwater data. If contaminants are found the the blanks, the source of the contamination shall be identified and corrective action, including resampling, should be initiated.

All field equipment that the owner/operator will use shall be calibrated prior to field use and recalibrated in the field before measuring each sample. The owner/operator's S&A plan shall describe a program for ensuring proper calibration of field equipment. Other QA/QC practices such as sampling equipment decontamination procedures and chain-of-custody procedures shall also be described in the owner/operator's S&A plan.

Laboratory QA/QC Program

The owner/operator's S&A plan shall provide for the use of standards, laboratory blanks, duplicates, and spiked samples for calibration and identification of potential matrix interferences. The owner/operator shall use adequate statistical procedures (e.g., QC charts) to monitor and document performance and implement an effective program to resolve testing problems (e.g., instrument maintenance, operator training). Data from QC samples (e.g., blanks, spiked samples) shall be used as a measure of performance or as an indicator of potential sources of cross-contamination, but shall not be used to alter or correct analytical data. These data shall be submitted to the Agency with the groundwater monitoring sample results.

DECONTAMINATION PROCEDURES

All sampling tools shall be decontaminated prior to entering the site. Sampling tools shall be cleaned between decontamination events to prevent cross contamination between the areas or units decontaminated. Specific decontamination procedures are presented below.

Sampling tools shall be cleaned by a initial scrub in a detergent wash of trisodium phosphate detergent (TSP), followed with a clean water rinse, a methanol or isopropyl alcohol rinse, and a final rinse in distilled water. Sampling personnel shall wear appropriate protective clothing as required by the Health and Safety Plan. Protective equipment (gloves, boots, etc.) which can be decontaminated shall be decontaminated prior to and following sample collection.

Water from the decontamination process shall be placed in drums near the point where it is generated and left on-site prior to proper disposal. Disposable safety equipment (i.e., booties, gloves, outer coverings) will be cleaned, placed in labelled drums, and left on-site prior to proper disposal.

Any tank, vessel, or container that contains hazardous constituents shall be decontaminated after removal of their respectively held wastes. Decontamination procedures shall consist of a wipe test with analysis, or solute test with analysis as provided in the attachment. This shall be completed prior to removal and/or destruction of the tank, vessels, or containers.

Wipe tests shall be performed on the interior surfaces and samples analyzed for appropriate parameters, i.e., cyanide for cyanide storage tanks, PCBs for tanks containing PCB contaminated materials, etc. Tanks subject to high-pressure water cleaning shall be checked by sampling and analysis of final rinsate. For cyanide, final rinsate concentrations shall not exceed 0.22 mg/l. Heavy metals shall be at concentrations less than Primary Drinking Water Standards. When acid or alkali materials are decontaminated, final pH should be in the pH neutral range. For PCB containing tanks, PCBs shall be present in the decontaminated tanks at concentrations of less than 10 ug/100cm^2, as determined by the standard wipe test, as defined in the EPA Polychlorinated Biphenyls Spill Cleanup Policy. For hazardous constituents for which no proposed standards exist, detection limits shall be implemented. Drums shall be rinsed, treated, or removed to an approved disposal facility. CCCI shall use a decontamination pad as detailed in Figure 9 of the Atec closure plan.

Positive displacement ventilation shall be provided in all tanks. CCCI shall have a licensed industrial hygienist or his representative present during all work in confined spaces.

Solid residues remaining in tanks shall be removed manually or by using suitable machinery. Collected residues (including rinse waters) shall be analyzed and disposed of accordingly.

Tank 20, containing neutralized acid sludge shall be decontaminated using high pressure water blasting. Tanks 19 and 22, containing oil, PCBs, and water require high-pressure, hot water; or sand blasting to remove clinging asphaltic residue. Sand blasting may be preferable since it will aid in solidifying the materials. Decontamimation of cyanide storage tanks shall include rinsing with hypochlorite solution. Tanks used for solvent storage shall be decontaminated by blasting with an appropriate detergent solution. Tanks too small for entry shall be treated by partially filling with detergent solution and mechanically agitating. Decontamination of pickle liquor storage tanks and the process sump shall be performed using a high pressure water rinse.

Equipment that has contacted the above referenced wastes shall be cleaned on a decontamination pad using an appropriate cleaning agent and high pressure steam cleaning. A detail of the decontamination pad is shown in Figure 9. Rinse waters from decontamination operations shall be collected, analyzed and disposed of accordingly. Upon termination of the closure activities, the decontamination pad will be dismantled and hauled to a licensed landfill.

The remaining tanks, containers, vessels, or storage units shall be decontaminated using historical data and sampling and analysis of the residues within the unit. Equipment, tools, and clothing from the solidification and stabilization processes shall be cleaned in a decontamination area. Water, soils, and debris from the decontamination procedure shall be disposed of at an approved facility.

3A

SOIL SAMPLING PLAN

Parameters for soil analysis shall include any element or compound that is a hazardous waste or hazardous constituent. Parameters shall not only be based on knowledge of the wastes managed at the unit, but shall also include other potential elements or compounds used at the site.

Locations of soil samples shall be selected to adequately determine the horizontal and vertical extent of all contaminants used. CCCI shall construct a grid system to determine the horizontal and vertical extent of contamination. The following equation shall be used to determine grid intervals.

$$GI = (A3.14/GL)^{0.5})/2$$

Where:

GL = greatest length of the area to be gridded (feet)

A = area to be gridded (feet^2), and

GI = grid interval (feet).

The grid interval shall be determined using the borders of the slurry wall as detailed in Figure 8 of the Atec closure document to obtain GL, the greatest length, and A, the area to be gridded. The grid pattern shall extend beyond the slurry wall circumference by one square. Each interior grid shall be further sectional. A random number generator shall be used to locate the soil boring for that sampling point on the grid. Samples shall be taken on the surface and every two-foot intervals to the saturated zone.

CCCI shall obtain a total metals analysis at each horizontal point and at each two-foot vertical interval. Headspace analysis with a photoionization detector (PID) and confirming ultraviolet analysis shall be implemented at each grid interval and at each two-foot vertical interval. The soil samples shall be placed in clean glass jars and allowed to sit for a minute. An HNU photoionization detector (PID) shall be used to detect the presence of organic vapors in the headspace of the sample jar. The detector shall be calibrated to read benzene directly in ppm. The samples shall then be examined in a properly equipped laboratory using ultraviolet light (uv). Hydrocarbons typically fluoresce when exposed to an ultraviolet light source indicating contaminant flow paths or stains which would normally not be visible. Samples that are positive for both UV and PID tests shall be analyzed for VOAs and SVOAs using GC/MS as outlined in the analytical section, IC-4.

Areas of obvious contamination, i.e., the pie shaped basin, the acid soil, the sump area, and the lagoon, shall be sampled horizontally and every two feet vertically to the saturated zone with a grid using the formula:

$$GI = [(A/3.14)^{0.5}]/2$$

Where:

GL = greatest length of the area to be gridded (feet)

A = area to be gridded (feet^2), and

GI = grid interval (feet)

The grid shall be further sectioned and CCCI shall again use a random number generator to determine the points to be sampled. The samples gathered shall be analyzed for ignitability, corrosivity, reactivity, EP Tox, total metals (priority pollutant list), VOAs, and SVOAs.

CCCI shall not include samples previously taken and analyzed whose documentation does not exist stating the exact location of each sample in the manner used to determine the grid.

A minimum of five background samples by horizontal level and by vertical level shall be obtained. The background sample points shall be taken from areas off-site that have not been disturbed. The samples shall be analyzed for total metals (priority pollutant list), VOAs, and SVOAs as detailed in IC-4.

CCCI shall put all results in tabular form. The grid coordinates shall be placed on a map detailing the sample locations for each grid designed. CCCI shall apply the sampling description of IC-2 and analysis of IC-4, reporting and QC/QA of IC-5.

Attachment B-1

Conservation Chemical Company of Illinois
Closure Plan
HEALTH AND SAFETY PLAN

A. PROJECT OBJECTIVES

The Conservation Chemical Company of Illinois (CCCI) facility encompasses a triangular four-acre parcel of land at 6500 Industrial Highway. The site is bounded on the west and southwest sides by the Elgin, Joliet, and Eastern Railroad right-of-ways and on the northeast side by a vacant industrial lot. The Gary Municipal Airport borders the site along the southeast side. A security fence has been established around the site with 24-hour security provided. Access to the facility can be attained only through the guard stationed at the entry gate.

The objective of this document is to provide a site specific Health and Safety (H&S) Plan for all contractors to use during all cleanup activities at the site.

This H&S Plan has been prepared based on presently existing site conditions. If these conditions were to change during project activities, health and safety adjustments will be made accordingly. It will be the responsibility of the Site Certified Industrial Hygienist (CIH) to make the needed adjustments and to inform the Indiana Department of Environmental Management (IDEM) of these adjustments.

B. KNOWN SITE HAZARDS

Site hazards include both physical and chemical hazards. Many of the tanks exhibit extensive rusting; some of the tanks (e.g., Tank 20) have had their tops partially destroyed. The manways of the tanks, according to CCCI personnel, should not be trusted. In addition, the stairway on the Tower is in poor condition and should be approached with extreme care.

The bulk storage tanks on-site are generally in a deteriorated condition. The tanks should not be manipulated at any time until their liquid contents are removed. Waste handling will be performed from manways or other openings located above the liquid level of the tanks.

Based on the information obtained from previous site investigations, discussions with former CCCI employees, and chemical analyses, at least the following chemicals are known to be on-site and pose a potential health risk to site personnel.

1. Cyanide

A cyanide release at the site would endanger the health and welfare of the workers in the direct vacinity. The release of cyanide vapor is most common in the presence of acids, which liberates a hydrogen cyanide (HCN) vapor. HCN vapor concentrations in air above 100 ppm have been found to be fatal to man after 30 minutes of exposure. A concentration of 270 ppm is immediately fatal (Patty, 1978). The behavior of the cyanide ion prevents the uptake of oxygen by the tissues with resulting asphyxial death. The cyanide ion is absorbed into all tissues; cyanide can be readily absorbed through the skin. The currently accepted threshold limit value (TLV) for HCN and cyanogen in the United States in 10 ppm.

2. Polychlorinated Biphenyls (PCBs)

PCB contaminated materials have been identified in Tanks 19 and 22. Most of the waste in Tank 19 has been transferred to Tank 22. Tanks 13, 14, 15, and 16 were observed to contain a thick oil mixture. These tanks appear to be part of a previous PCB cleanup operation at the site. During a past inspection, the contents of Tank 19 were observed to have leaked from the tank and spread to the area bounded by the rail spurs to the east and west of the acid soil area.

3. Sludge Material

Tank 20 contains material referred to as "sludge." Inspection of the tank has shown it to be in poor condition, and portions of the top of the tank have been destroyed, allowing rain water and snow to enter the tank. In addition, the tank has a past history of leakage.

The potential dangers presented by Tank 20 involve primarily the quantity of hazardous material in the tank and the deteriorated condition of the tank. The high concentrations of metals in the tank pose a significant threat to personnel through ingestion or direct contact.

4. Waste Solvent Material

Tanks 23 and 24 contain a material that is a combination of a variety of chlorinated hydrocarbons that were mostly generated as solvents. The tanks contain solvent material that is dominated primarily by a methylene chloride-hydrocarbon mixture. Analyses have shown the organic chloride content ranges from 8.5 percent to 14.5 percent. Based on a conversation with a former CCCI employee (Mr. Chet Nellett), Tank 31 also contains a solvent mixture whose content is unknown, at present. Cleanup personnel will take the appropriate action to minimize any releases from the tanks.

5. Waste Acid and Chlorine

Highly acidic wastes are present in Tanks 34 and 36 as liquids, and in Tank 9 as a dreg/sludge. The contents of Tank 32 are less acidic. Tank 34 is potentially highly dangerous due to its large volume, a pH of less than one, and deteriorated condition of the tank. It is not known if cylinders of chlorine gas still exist on-site. For protection from the accidental release of chlorine gas and the risk from cyanide gas described in (1), emergency escape respiratory protection shall be provided to all site employees.

6. Silicon Tetrachloride

Tanks 40, 41, and 42, located west of the office shop-work area complex, are believed to contain silicon tetrachloride. This compound is a highly irritating, colorless, corrisive fuming liquid that has an odor described as "suffocating." It is highly toxic by both inhalation and ingestion. DO NOT BRING INTO CONTACAT WITH WATER.

This is a list of chemicals known to be on the site. Additional chemicals may be found. If this happens, the CIH may add to this plan, but must inform the IDEM of these additions.

C. PROGRAM STRUCTURE

This H&S Plan prescribes workplace procedures which will be followed in order to protect employees who will be performing at least the following tasks:

1. Removal and transport of wastes (liquids and dreg) from the tanks for off-site treatment and disposal.

2. Tank cleaning with subsequent removal and transport of rinstate for off-site treatment and disposal.

3. Collection of samples from fract tanks.

The requirements listed and tasks performed may change as work progresses due to changing conditions, but no changes will be made without prior approval by the CIH. The program outlined in this H&S Plan is for all site personnel.

The CIH will be responsible for the coordination of this plan. He/she will be on-site for the project start-up and through the course of the project to supervise the worker protection program. Liaison with the IDEM or the U.S. EPA and its representatives and/or subcontractors on matters relating to safety and health will be handled by the CIH.

The Project Manager is responsible for field implementation of the H&S Plan, but only the CIH can change its provisions. The Project Manager's responsibilities include communicating the specific requirements to all personnel, conducting audits, and consulting with the CIH regarding appropriate changes in safety and health requirements. Specific site functions that the CIH will be responsible for implementing include:

1. Supervise the day-to-day implementation of the site-specific health and safety program.

2. Train new site personnel on the specific site health and safety items, interact with project personnel on health and safety matters, investigate and report accidents/incidents.

3. Maintain liaison between field activities and regulatory personnel.

4. Perform air quality and personal monitoring as required.

5. Enforce the requirements of the H&S Plan and the site-specific program.

All on-site personnel are responsible for understanding and complying with the requirements of this plan. Failure to comply with this plan will result in disciplinary action, which could lead to removal from the site or termination.

D. PERMISSIBLE EXPOSURE LIMIT GUIDELINES

Eight-hour time-weighted average for threshold limit values (TLVs), concentrations immediately dangerous to life or health (IDLH) and other physical characteristics of some of the chemicals most likely encountered during work are as follows:

	TLV	IDLH	COMMENTS
Hydrogen Cyanide	10 ppm	50 ppm	Bitter almond odor, weakness, headache, nausea, vomiting at lower concentrations. See Section B.1.
Methylene Chloride	100 ppm	5000 ppm	Avoid eye-skin contact. Odor Threshold: 300-600 ppm.
Hydrochloric Acid	5 ppm	100 ppm	Colorless gas with irritating odor. Avoid eye, mucous membrane contact.

The contractor and/or the CIH must complete this list for all chemicals encountered at the site.

E. TRAINING PROGRAM

All personnel, prior to being allowed site access, will attend a training session conducted by the CIH that communicates the potential H&S hazards on the site and instructs the individuals on the requirements of the H&S Plan. This trainig will be designed to address the requirements of OSHA Hazard Communication Standard (29 CFR 1910.1200), OSHA Hazardous Waste Operations and Emergency Response, Interim Final Rule (29 CFR 1910.120), and health and safety training required under RCRA.

1. Preproject Training

All employees and contractors who work on-site shall have successfully completed a formal training program which shall include, as a minimum, the following items before they are permitted to enter the Exclusion or Decontamination zones:

a. Basic Safety - This course shall stress fundamentals such as the cause and prevention of slip, trip, and fall hazards; safe lifting techniques; heat stress illnesses and their prevention.

b. Hazard Protection - This course shall deal with the identification, recognition, and safe work procedures of toxic materials. The use and limitations of applicable protective clothing, and decontamination procedures are an important part of this course.

c. First Aid and Cardiopulmonary Resuscitation (CPR) - A portion of employees will have completed the standard Red Cross First Aid and CPR courses.

d. Health Hazard Awareness - Information shall be given concerning hazardous materials on-site to which employees may be exposed. Information will include routes of exposure, toxic effects, appropriate protective equipment, medical surveillance, and the nature of the job as it relates to specific chemicals on-site.

e. Work practices and engineering controls to minimize risk.

f. Emergency Response Training - Procedures outlined in site emergency procedures are to be reviewed with all personnel on-site.

g. Hearing Conservation Program.

h. Respirator Training - The use, limitations, and inspection of air purifying respirators, and SCBAs will be discussed. Proper decontamination procedures will also be covered. Respirator fit test will be given to all personnel consisting of qualitative fit test using irritant smoke in a plastic containment. Personnel shall breath normally and heavily, move their heads up and down and side to side, and talk while wearing the respirator in the smoke.

Upon completion of this training, the employee will be asked to complete a form illustrating that they have completed each phase of this training.

All employees and contractors, who are expected to enter the Exclusion and/or Decontamination Zones shall have received a minimum of 40 hours of initial off-site instruction. On-site supervisors shall complete at least eight additional hours of specialized training.

2. Daily Safety Meetings

A daily safety meeting will be conducted at the beginning of each shift or whenever new employees or contractors arrive at the job site once the job begins. These meetings discuss the H&S considerations for the day's activities and outline the necessary protective equipment. This meeting will be conducted by the CIH who will complete Safety Meeting form which, at a minimum, will include the following: date and time of meeting; safety topics presented, such as protective clothing/equipment, chemical hazards, physical hazards, emergency procedures, and special equipment; plus the names and signatures of all attendees; the person conducting the meeting (CIH); and the site project manager.

3. Training Records

All training that is conducted on-site will be documented using the appropriate forms which will be retained in the employee's job file. Forms covering subcontractor employment will be forwarded to those organizations, with a copy retained in the project file.

F. MEDIAL SURVEILLANCE

1. Pre- and Post-project Physical Examinations

All personnel that work in the Exclusions or Decontamination Zones will receive a pre- and post-project physical examination. The pre-project physical will take place within fifteen (15) days prior to working on-site and the post-project physical will take place within thirty (30) days after leaving the site. The examination will include:

a. Medical and occupational history and physical examination (including a history of respiratory disease).

b. Complete blood count and differential.

c. Urinalysis (dip stick and microscopic).

d. SMA-20 or equivalent.

e. Audiometric examination.

f. Chest X-ray (14 x 17 posterior/anterior view).

g. Pulmonary function test (FVC and FEV 1.0).

h. EKG for employees over 45 years of age or when there is an indication of problem.

i. Vision acuity and color.

j. Drug and alcohol screen.

The chest X-ray may be omitted for personnel who have had one within the past year.

2. Injury and Illness Treatment

Any employee who is suspected of having an over-exposure to the chemicals on-site will be given a complete physical examination. A contract with a local medical institution must be entered into for them to provide this service, as well as to treat injuries that occur on the job that are not handled at the site as first aid or treated as an emergency hospital visit. The contractor or CIH must supply the name of this institution to the IDEM. Any employee or contractor who develops a lost-time illness or sustains a lost-time injury will be reexamined by a physician. The physician will certify that the employee is fit to return to work before his employment on-site can continue. Any physical activity that should be restricted based on the physician's evaluation is to be noted on an appropriate form.

In the event of any injury or accident, a "Supervisor's Employee Injury Report" shall be completed as soon as practical by a supervisor after the event. This shall be reviewed by the Project Manager and the CIH.

3. Medical Records

All medical surveillance records shall be maintained for a period of thirty (30) years and shall be available as required by State and/or local regulations; namely 29 CFR 1910.20(a-e) and (g-i).

G. PERSONNEL PROTECTION EQUIPMENT

1. Employees providing support services not in the Exclusion Zones (i.e., decontamination, sample collection support) shall be equipped with Level C protection, which includes the following:

   a. Full-face, air-purifying respirator with GMC-type cartridges and prefilter (MSHA/NIOSH approved) for organic vapors, chlorine, formaldehyde, hydrogen chloride, and sulfur dioxide.

   b. Polycoated tyvek coveralls (hooded) - sleeves taped to gloves, legs taped to boots.

   c. PVC outer gloves.

   d. Surgical-type inner gloves.

   e. Hard hat.

   f. Rubber boots with steel toe and shank.

   g. Outer boot covers (chemical protective throw-aways).

   h. Escape mask (ELSA).

2. Employees who are involved in the actual removal, transfer of materials, tank cleaning, and sample collection support shall be equipped with Level B protection as prescribed below:

   a. Positive pressure SCBA.

   b. Sigal guardian suits (which tape up).

   c. PVC or neoprene outer gloves.

   d. Surgical-type inner gloves.

   e. Hard hat.

   f. Rubber boots with steel toe and shank.

   g. Outer boot covers (chemical protective, throw-aways).

3. The following respiratory protection program for Level C shall be followed:

   a. Air-purifying cartridges shall be replaced at the end of each shift or if breakthrough or loadup occurs.

b. Only employees who have had preissue qualitative fit tests, and annual fit tests thereafter, shall be allowed to work in atmospheres where respirators are required.

c. If an employee has demonstrated difficulty in breathing during the fit test or during use, he or she shall have a physical examination to determine whether the employee can wear a respirator while performing the required duty.

d. No employee shall be assigned to tasks requiring the use of respirators if, based on the most recent examination, a physician determines that the employee will be unable to function normally wearing a respirator or that the health and safety of the employee or other employees will be impaired by use of a respirator.

e. The employee shall be permitted to change cartridges whenever an increase in breathing resistance is detected.

f. Beards and other facial obstructions which prevent a seal between the face and respirator will not be allowed.

H. WORK ZONES

The contractor shall clearly define and mark work zones in and around the site and the CIH shall specify equipment, operations, and personnel requirements within these areas. The work on-site will be conducted in Exclusion, Decontamination, and Support Zones.

1. Exclusion Zone

This zone includes the actual areas of contamination and has the highest inhalation and skin exposure potential to chemicals on-site. This area will be approximately a ten-meter radius around each tank, drum, or Tower where cleanup operations are to be conducted. The Exclusion Zone will be delineated with stakes and hazard tape.

2. Decontamination Zone

This zone includes the areas immediately surrounding the Exclusion Zone. This shall occur at the interface of the Exclusion Zone and the Support Zone and shall provide for the decontamination of equipment and personnel before crossing into the Support Zone.

3. Support Zone

This zone covers all areas outside of the Decontamination Zone. This area is considered to have no significant air, water, or soil contamination. The Support Zone provides a changing area for personnel entering the Decontamination and Exclusion Zones.

I. DECONTAMINATION PROCEDURES

1. Personnel Decontamination

Upon leaving the Exclusion Zone, personnel shall:

-- Wash and rinse outersuit, respirator, gloves, and boots.

-- Untape mask, ankles, and wrist.

-- Remove outersuit, gloves, boot covers, and hard hat.

-- Wash and rinse inner gloves and boots.

-- Remove respirator, inner gloves, and inner boots.

- Remove inner clothing in decontamination trailer, shower, and redress.

The SCBA will be disconnected from the regulator at the upwind (identified by a flag) edge of the Exclusion Zone. Personnel will then connect to a MSA an acid gas/organic vapor/HEPA filter canister that is MSHA/NIOSH approved in order to move through the Level C zone and initial decontamination procedures. The Sigel suits will be scrubbed down with detergent and rinsed for reuse before each break and at the end of each shift. New outer gloves and boot covers will be worn after each break.

The break area will be in the Decontamination Zone next to the shower trailer. All outer protective equipment shall be decontaminated before removal for a break. Drinking will be permitted in this area only after hands and face have been washed. Eating and smoking is only permitted in the Support Zone. Showers are required by all personnel working in Level B and C prior to entering the Support Zone.

2. Equipment Decontamination

All equipment used in the project operations on-site shall be cleaned in the decontamination area before removal to the Support Zone. Protective equipment such as respirator facepieces will be decontaminated at the end of the shift. The heavy equipment will be steam cleaned on the truck decontamination pad before removal to the Support Zone. Monitoring equipment, e.g., Hnu meter (photo-ionization meter), HCN monitor, etc., will be protected from contamination to the extent practical by plastic bags. Exposed parts will be cleaned with wet cloths and alcohol wipes.

3. Wate Disposal

Decontamination water and protective clothing will be stored in drums on-site and disposed of during the project.

J. WORK ACTIVITIES

Personnel involved in tank cleaning, material transfer or treatment, or sample collection will use Level B personnel protection specified in Section G.

Tanks which will undergo removal and cleaning operations will initially be accessed from a roof or manway above the liquid level of the tank. Personnel shall gain access to this point with a (hydraulic type) aerial lift bucket. Use of an extension ladder may be approved on a case-by-case basis by the CIH.

All employees working at elevated locations (above four feet from the ground) shall be equipped with lifeline and Class II harness (chest type). These employees may also be equipped with two-way radios and use hand signals to communicate with the CIH and other site personnel. Tank cleanup will consist of at least the procedures summarized below:

1. Evacuation of liquids.

2. Washdown and slurry.

3. Sludge/dreg removal.

4. Decontamination of the Tower.

Other procedures may be added by the CIH if the need arises.

It is expected that project personnel will not enter a tank during any cleanup activity; thus a Level A (confined space) situation is not anticipated. If sludge/dreg remains after an initial rinsing, then access to this material must be gained for its removal. It is assumed personnel can obtain access for proper removal by cutting entry portals in the tanks eliminating confined space entry. If this assumption does not hold true, Level A protection will be used.

K. AIR MONITORING

Air monitoring will be performed during all phases of the project. As HCN gas is of primary concern to personnel, at least two MDA Computer Model 400 HCN monitors will be kept and utilized on-site. These monitoring devices may be attached directly to site personnel to monitor worker exposure during the various work functions or used for area monitoring purposes. The HCN monitors are set to alarm at a HCN concentration of 10 ppm. In addition, they have the following cross sensitivities and will alarm at the 10 ppm set point:

CONCENTRATION IN AIR		METER READOUT
H_2	2 ppm	10 ppm
Chlorine	10 ppm	5 ppm
HCl	10 ppm	7 ppm
Phosgene	10 ppm	5 ppm

If alarms are sounded, Draeger tubes for HCN and H_2S will be used for additional air monitoring. Based on results of this air testing, the CIH may decide to upgrade the level of protection.

Area air monitoring will also be conducted with direct reading instruments for explosive limits, oxygen, and volatile organic compounds (VOCs). Monitoring for explosive limits and oxygen deficiency is to be conducted using MSA 260, GasTech 1314, or equivalent combustible gas/oxygen meters. Monitoring for VOCs is to be conducted using HNu PI101 or Organic Vapor Analyzer (OVA). Additional Draeger Tubes (i.e., methylene chloride) will be kept on-site and used as needed.

Where tank cutting is involved, air monitoring will be conducted to comply with the contractor's Hot Work Permit.

Attachment B-2

Conservation Chemical Company of Illinois
Closure Plan
EMERGENCY CONTINGENCY AND RESPONSE PLAN (ECRP)

A. SCOPE OF WORK

The Health and Safety (H&S) Plan for the Conservation Chemical Company of Illinois (CCCI) site has been established to allow site operations to be conducted in order to minimize hazardous health impacts on employee and community health and safety. In addition, this Emergency Contingency and Response Plan (ECRP) has been developed to cover extraordinary conditions that might occur at the site.

All accidents and unusual events will be dealt with in a manner to minimize health risk to site workers and the surrounding community. In the event of an accident or other unusual event, the following procedures will be followed:

1. First aid and other appropriate initial action will be administered by properly trained personnel closest to the incident. This assistance will be conducted in a manner to assure that those rendering assistance are not placed in a situation of unacceptable risk.

2. All incidents will be reported to and documented by the designated Emergency Coordinator, who is responsible for coordinating the emergency response in an efficient, rapid, and safe manner. The Emergency Coordinator will decide if off-site assistance, medical treatment, or both is required and arrange for such assistance. The Emergency Coordinator will ensure that adequate emergency equipment will be available on site.

3. All workers on site are responsible to conduct themselves in a mature, calm manner in the event of an accident or unusual event. All personnel must conduct themselves in a manner to avoid spreading danger to themselves, surrounding workers, or the community in general.

The site Project Manager will administer site security during activation of the ECRP.

B. RESPONSIBILITIES

1. Emergency Coordinator

The site Project Manager is responsible for field implementation of the ECRP. This person has training and experience in emergency response. As the Emergency Coordinator, specific duties include:

a. Communicating site ECRP requirements to all personnel, whether directly involved in emergency response or not.

b. Specifying a backup alternate (most likely the CIH).

c. Purchasing supplies as necessary.

d. Controlling activities of subcontractors and respond to outside agencies.

e. Anticipating, identifying, assessing, and controlling fires, explosions, chemical releases, and other emergency situations.

2. <u>Safety Coordinator or Certified Industrial Hygienist (CIH)</u>

The CIH is responsible for:

-- Establishing health and safety procedures.
-- Conducting preproject training.
-- Directing the safety technician.
-- Monitoring during project start-up.

He/she will make advance arrangements with appropriate support groups and alert them to the site hazards and types of emergencies that may arise. As the Safety Coordinator, specific duties include:

a. Providing a map of the site location and define the ingress routes.

b. Determining response time and adequacy of emergency support services.

c. Identifying backup medical and emergency facilities.

d. Providing training and information about hazards on site and special handling procedures.

e. Establishing personal contact with each designated agency. This includes on-site training for appropriate response agencies.

3. <u>Site Personnel</u>

All on-site personnel, whether involved in emergency response or not, will be notified of their responsibilities in an emergency. They will be familiar with the ECRP and the Emergency Coordinator's authority.

The contractors ECRP teams will be trained in decontamination, response, rescue, and hazard containment. These teams will be American Red Cross-certified (or equivalent) in cardiopulminary resuscitation (CPR) and emergency first aid.

C. EMERGENCY EQUIPMENT

In the event of an emergency, equipment will be available to rescue and treat victims, protect response personnel, and mitigate hazardous conditions on site. This equipment will be stored at a secure location (i.e., the Administration trailer) and away from sources of contamination until it is needed.

1. Personal Protection

Personal protection equipment will include:

- Neoprene boots.
- Sigal Guardian suits.
- Tyvek suits - polyethylene coated and uncoated.
- Neoprene and nitrile gloves.
- Face shields and goggles.
- Self-contained breathing apparatus (SCBA).
- Full-face chemical cartride respirators with cartridges for organic vapors and dust.

2. Medical

Emergency first aid equipment will include:

- Splints.
- Antiseptics.
- Blankets.
- Decontamination solutions appropriate for on-site chemical hazards.
- Emergency eye wash.
- Emergency showers or wash stations.
- Cold packs.

- -- Reference books containing basic first aid procedures and information on treatment of specific chemical injuries.
- -- Stretchers.
- -- Water, in portable containers.
- -- Emetic agent to induce vomiting.
- -- Antibacterial ointments.
- -- Bandage materials.

3. Hazard Mitigation

Hazard mitigation equipment will be stored in a spill control equipment locker, and is to be used in the physical containment of any released hazardous constituents. This equipment will include:

- -- Containers to hold contaminated materials, i.e., 55-gallon drums.
- -- Visqueen.
- -- Sorbent material and booms for both liquids and oils.
- -- "Dike and Plug" or similar material for patching tanks.
- -- "Water Bug" or similar type pump for collection of liquids.
- -- Shovels - wooden handle, steel type.

D. COMMUNICATING AND NOTIFICATION

1. Communications

The primary internal communication system will rely on radio communications between site trailer and site personnel. Hand signals will be used as a backup should radio communications fail.

External communications will employ stationary phones housed in the site trailer. Personnel will be familiar with protocol for contacting support groups and agencies identified in the ECRP. Emergency numbers will be placed in vehicles and at strategic locations throughout the site.

2. Site Maps

a. Assembly Area

A site evacuation area will be designated before job start-up and will be located upwind of the prevailing wind. Here, emergency needs will be provided such as:

-- Assembly for evacuated site personnel.
-- First aid for injured personnel.
-- Decontamination material.
-- Communications.

b. Emergency Services Route Maps and Institutions

An emergency services route map will be prepared and located in all vehicles. Also, posted will be a list with the name, addresses, and telephone numbers of the following emergency related institutions:

-- Nearest full-service hospital.
-- Local contracted clinic or hospital.
-- Contracted ambulance service.
-- Local police department.
-- Local fire department.

All maps will be used in training sessions and in emergency response planning. Practice "runs" will be made along all emergency service routes by supervisory personnel.

c. Notification

If the Emergency Coordinator determines that the site has an uncontrolled situation such as a spill, fire, or explosion which could threaten public health or the environment, he will report his findings as follows:

1. Alert site personnel via radio.

2. If his assessment indicates that evacuation of the work area may be advisable, he will immediately initiate the evacuation notice, stop the operation, and notify one person from each organization of the appropriate authorities. He will be available to help appropriate officials decide whether adjacent areas should be evacuated.

3. In the event normal communication lines fail, a backup communication system will be activated. This system (e.g., a Citizen's Band radio or mobile telephone) will be able to access the appropriate emergency service providers.

The notification report will be made from the site trailer to the appropriate support groups and will include:

-- Description of incident (e.g., release, fire).

-- Name and telephone number of reporter.

-- Name and address of incident.

-- Name and quantity of materials or material involved to the extent known.

-- The extent of injuries, if any.

-- The possible hazards to human health or the environment, and cleanup procedures.
    -- Assistance that is requested.

E. EMERGENCY PROCEDURES

Potential incidents fall under four general classifications: (1) fire or explosions; (2) chemical releases to the atmosphere, soil, or surface waters; (3) severe weather conditions such as tornado and lightnjng storms; and (4) worker injury or illnesses. The following sequence of events constitute the specific responses and control procedures to be taken in the event of these four incident scenarios.

The initial response to any emergency will be to protect human health and safety, and then the environment. Secondary response to the emergency will be identification, containment, treatment, and disposal assessment.

1. Hazard Assessment

The Emergency Coordinator in consultation with the CIH will assess possible hazards to human health or the environment that may result from the chemical release, fire, explosion, or severe weather conditions. The Emergency Coordinator will assess the hazards posed by an incident through the following steps, as appropriate:

-- Assess immediate need to protect human health and safety.

-- Identify the materials involved in the incident.

-- Identify exposure and/or release pathways and the quantities of materials involved.

-- Determine the potential effects of exposure/release, and appropriate safety precautions.

This assessment will consider both the direct and indirect effects of the chemical release, fire, explosion, or severe weather conditions (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions).

Based on this assessment, the Emergency Coordinator will determine what risks are posed to employees and community populations. If the incident cannot be controlled by operating personnel without incurring undue risk, the Emergency Coordinator will order the evacuation of all workers at risk and notify appropriate institutions of the situation and the assistance required. If the Emergency Coordinator determines that any persons outside the site are at risk as a result of the incident, he will contact the appropriate institutions and advise them of the risk and the need or potential need to institute off-site evacuation procedures.

2. <u>Fire and Explosion</u>

When fire or explosion appear imminent or have occurred, all project activities will cease.

The Emergency Coordinator will assess the severity of the situation and decide whether the emergency event is or is not readily controllable with existing fire suppression equipment on hand. Firefighting will not be done if the risk to operating personnel appears high. The Fire Department will be called in all situations in which fires or explosions have occurred.

If the situation appears uncontrollable, and poses a direct threat to human life or the environment, a warning will be administered to all personnel to secure their emergency equipment. If the chances of an impending explosion are high, the entire site will be evacuated.

The Emergency Coordinator will alert all personnel when all danger has passed, as determined by the fire department.

Situations which will activate notification of other emergency contacts are:

-- A fire causes or could cause the release of toxic fumes.

-- The fire spreads and could possibly ignite nearby fuel oil or other liquid wastes, or could cause heat-induced explosions.

-- The fire could possibly spread to off-site areas.

- Use of fire extinguishers and suppressants does not result in fire contaminant.
- An imminent danger exists that an explosion could occur, causing a safety or health hazard.
- An imminent danger exists that an explosion could ignite other hazardous waste at the facility.
- An imminent danger exists that an explosion could result in release of toxic materials.
- An explosion has occurred.

3. Chemical Release

If a chemical release resulting in probable vapor cloud is noted, the information will be immediately relayed to the Emergency Coordinator. The Emergency Coordinator in consultation with the CIH will assess the magnitude and potential seriousness of the release by reviewing the following information:

- Material safety data sheets (MSDS) for the material released.
- Source of the release.
- An estimate of the quantity released and the rate at which it is being released.
- The direction in which the air release is moving.
- Personnel who may be or may have been in contact with material, or air release, and possible injury or sickness as a result.
- Potential for fire or explosion resulting from the situation.
- Estimates of area under influence of release.

If the release is determined to lie within the on-site emergency response capabilities, the Emergency Coordinator will implement the appropriate action.

If the incident results in chemical concentrations at the site perimeter exceeding the action levels specified in the Health and Safety Plan, the Emergency Coordinator will notify the appropriate support agencies. The Emergency Coordinator may elect to make immediate notification if conditions warrant. In the event of an emergency release, all personnel not involved with emergency response activity will be evacuated from the immediate area.

MSDS forms will be consulted in the event of a chemical release to air, land, or water.

4. <u>Natural Disaster</u>

When a tornado warning has been issued or when a lightning storm occurs (within a five-mile radius of the site), the information will be immediately relayed to the Emergency Coordinator in the Support Area and all personnel shall stand by for emergency procedures. In the case of a tornado siting, personnel shall institute shutdown procedures and lie down in a depression. When a storm passes, the Emergency Coordinator will inspect all of the on-site equipment to ensure its readiness for operation. If any equipment has been damaged, the work will not be restarted until the equipment has been repaired or replaced.

If the Emergency Coordinator's inspection indicates a fire, explosion, or release has occurred as the result of a severe weather condition, he will follow the appropriate procedures in Sections 2 and 3.

5. <u>Security</u>

During activation of the ECRP, the Emergency Coordinator or his designated representative, will control access to the site and maintain a security incident log which will include:

-- Time of entry.
-- Expected exit time.
-- Use of team or "buddy" system.
-- Task being performed.
-- Location of task.
-- Rescue and response equipment used.
-- Protective equipment being used.

6. <u>Medical Treatment/Accident</u>

a. Selected on-site emergency personnel will be trained:

-- In on-the-spot first aid and CPR treatment techniques.

-- To establish contact with medical experts

- To establish liaisons with local emergency response support agencies.

b. Program elements will include as a minimum:

- Establishing liasison with local medical personnel, for example: contracted physician, medical specialists, local hospitals, ambulance service, and poison control center. Inform and educate these personnel about site-specific hazards so that they can be optimally helpful if an emergency occurs. Develop procedures for contacting them; familiarize all on-site emergency personnel with these procedures.

- Setting up on-site emergency first aid stations; see that they are well supplied and restocked immediately after each emergency.

7. <u>Follow-up and Reentry</u>

Before normal operations are resumed, the Emergency Coordinator will see that another emergency can be handled by:

- Assuring all appropriate notifications were made.
- Restocking all equipment and supplies.
- Clean, refuel, and repair all additional equipment.
- Review and revise all aspects of the ECRP.

In addition, the Emergency Coordinator will verify that ambient concentrations of toxic chemicals are below limits generally recognized as safe.

F. <u>TRAINING</u>

In addition to the preproject training outlined in the Health and Safety Plan, specific emergency response training will:

- Relate directly to site-specific, anticipated situations.
- Be repeated often in daily training sessions.
- Provide for an evacuation drill.
- Ensure that training records are maintained.

Visitors will be briefed on basic emergency procedures such as decontamination, emergency signals, and evacuation routes.

Personnel without defined emergency response roles (e.g., contractors, federal and State agency representatives) must still receive a level of training that includes at a minimum:

-- Hazard recognition.

-- Standard operating procedures.

-- Signaling an emergency: the radio signals used, how to summon help, what information to give and who to give it to.

-- Evacuation routes and assembly area.

-- The person or station to report to when the ECRP is activated.

Contractor personnel will have a thorough understanding of the ECRP. Training will be directly related to their specific roles and will include:

-- Emergency chain-of-command.

-- Communication methods and signals.

-- How to call for help.

-- Emergency equipment and its use.

-- Emergency evacuation while wearing protective equipment.

2. Hazards other than detectable gases/vapors such as phosgene, HCN, chlorine, liquid/solid particulates and other harmful conditions may exist.

3. Potential for an explosive atmosphere exists when the instrument reaches its maximum reading of 2,000 ppm and should be checked with an explosive meter.

The primary purpose of total vapor testing is to determine explosion potential.

1C-3b

A COMPATIBILITY FIELD TESTING PROCEDURE*

OVERVIEW

Characterization identifies the hazardous mataerials on a site and determines which materials may be composited. The characterization procedure is flexible and may be altered to perform other tests as required by a disposal site. A bench-scale compositing procedure is performed to ensure that drum materials with similar chemical properties are compatible and to minimize problems during on-site compositing.

CHEMICAL CHARACTERIZATION

When a large number of drums containing different materials are discovered on a site, on-site compositing is a cost effective means to remove the materials from the site. In order to composite the drum materials, the chemical characteristics of the materials in each drum must be determined. Chemical characterization is performed to identify the hazardous materials on-site and to determine which materials are chemically similar for on-site compositing. If chemically dissimilar materials are composited, violent reactions could occur during mixing. Characterization is accomplished by testing drum contents with portable field instruments. Since only general chemical properties are needed to determine which materials are compatible, a complete chemical analysis of the material from each drum is unnecessary. In addition, testing drum contents with field instruments is faster and less costly than laboratory analysis.

Several different characterization schemes might be proposed that require various field tests to characterize materials on-site. Some of the possible field tests include:

--radiation
--organic vapors
--pH
--oxidation potential
--reduction potential
--flammability
--combustibility
--solubility
--water reactivity
--flash point
--PCBs
--cyanides
--sulfides
--chlorides

RECOMMENDED TESTS AND PROCEDURES

Based on the experience gained at the Western Processing site, the following characterization scheme is recommended to chemically characterize drum contents. The information obtained from the recommended procedure includes measures of organic vapors, radiation, pH, flammability, water reactivity, and oxidation potential for each drum.

Prior to conducting the tests, all the drums on a site should be staged and opened. Organic vapor and radiation tests are conducted directly from the drums in the staging area. The other tests must be conducted on samples taken from each drum. Representative samples should be taken using glass rods and

*U.S. EPA, Hazardous Response Support Division transferred to one-pint glass jars. A minimum of materials is needed to complete the characterization and bench-scale compositing procedures. A characterization table is set up to perform the remaining tests. Testing stations are set up on the table so that as one test is complete, another test may be started. Several samples may be tested at once to increase the efficiency of the procedure.

Other tests may be performed on drum samples if required by disposal site considerations. Materials containing PCBs must be identified because they may require special disposal methods. Flammables and oils should be tested for PCBs using a portable test kit or by an analytical laboratory. Since PCB tests are costly and time consuming, one recommendation is that the PCB analysis be conducted on composited samples obtained during the bench-scale compositing procedure described later. Cyanide and sulfide concentrations may be determined by testing samples with an ion meter using specific probes. These tests also require more time to perform and might be conducted on individual or composited samples during the bench-scale compositing procedure.

The recommended testing procedures and the information obtained from each test are presented below.

Radiation and Organic Vapor Survey

Drums are staged and opened prior to the survey so that the surey can be conducted quickly. Radiation is measured by placing the probe of a radiation meter near the opening of each drum. If the radiation test on any drum is positive, then the drum should be set aside to be disposed of as a radioactive material. Exposure of cleanup personnel to the radioactive material should be avoided and no other tests should be performed on the material. Organic vapors are measured by placing the probe of an organic vapor analyzer or photoionizer into the air space in each drum. A high organic reading from drum material indicates that the material may be flammable. All survey information should be recorded on a drum inventory or characterization data record.

pH Measurement

Transfer 100 ml of sample from the glass sample jar to a 4.5 oz. heavy polypropylene cup. The pH of a sample is determined using a multiband pH paper strip. The strip is immersed in the sample and withdrawn. The paper is compared to a reference chart indicating specific colors for different pH values.

The pH of a highly colored substance such as waste ink is accomplished using a standard pH meter. A pH meter is not recommended for the majority of the pH tests because the meter probe fouls easily and would require constant maintenance.

Measurement of pH is important, especially in determining compatibility with other materials. High and low pH materials should be segregated because of the violent reactions and possibly toxic substances released when these materials mix. The pH of a material also indicates corrosivity (pH less than or equal to two or greater than twelve (12)), which is a concern in transportation and disposal of the material.

Flammability

Using a disposable plastic, closed-bulb pipette, transfer approximately 5 ml of material from the polypropylene cup to a disposable glass vial. Screen the sample in the vial for explosive hazard by placing an ignition source just inside the top of the vial. If the vapors generated by the material at ambient temperatures ignite, the material should be considered flammable and/or potentially explosive. Vapor ignition will be evident by a flame flash at the top of the vial, generally followed by the extinguishing of the ignition source. An electric match, butane lighter, or pilot light are acceptable as an ignition source.

Samples with vapors that do not ignite at ambient temperature should be tested for flammability. Several vials are placed in a rack, covered with loose plastic caps, and immersed in a water bath at a constant temperature of $100^{\circ}F$. Once the materials in the vials have reached the temperature of the water bath, the plastic cap is removed from each vial and an ignition source immediately is placed at the top of the vial. If the vapors from the material ignite, the material is flammable. Materials determined to be nonflammable are further tested for combustibility by raising the temperature of the water bath to $150^{\circ}F$ and repeating the ignition test. Materials whose vapors ignite between 100° and $150^{\circ}F$ are considered nonflammable and noncombustible. This procedure is especially efficient when several samples are heated at the same time.

The determination of the flammability or combustibility of a material is important for hazard determination and for transportation and disposal requirements. Flammable and combustible materials present a greater hazard than nonflammable or noncombustible material. In addition, flammable and combustible materials must be properly placarded on transport vehicles. This test procedure may be adjusted if a disposal site has limitations concerning material flash points.

Water Reactivity

Place 100 ml of distilled water in a 4.5 oz heavy polypropylene cup. Note the temperature of the water and continue to monitor the temperature throughout the procedure. Add 2 ml of sample from the pH measurement cup to the distilled water with a plastic disposable, closed-bulb pipette. If the temperature of the resulting mixture increases, then the material is considered water reactive. Prior to conducting the test, it is imperative to confirm that the distilled water and sample are at the same initial temperature.

Water reactivity is determined for several reasons. The Resource Conservation and Recovery Act defines a material as hazardous if it is reactive with water. The probability that a material on a site will contact water at some time is high, especially material in drums that have deteriorated.

Oxidation Potential

Place 50 ml of 0.001 Normal ferrous ammonium sulfate solution into a 4.5 oz heavy polypropylene cup. Measure the cell potential of the ferrous ammonium sulfate solution using a millivolt (mV) meter with a platinum sensing electrode and standard reference electrode. Remove the electrodes and add 50 ml of sample from the pH measurement cup to the ferrous ammonium sulfate solution. Mix the solutions and let stand for one minute. Measure the change in cell potential of the mixture with the millivolt meter. A change of 50 mV in the positive direction indicates the presence of an oxidizing agent in the sample. Ferrous ammonium sulfate is used in this procedure because it is easily oxidized and the difference in oxidation potential may be measured with the millivolt meter.[4]

If the sample is organic in nature, the mixture may separate into layers. The organic layer of the mixture should be drained off and only the aqueous layer of the mixture is tested. It is important to keep the probes away from organic materials because they will foul and require constant maintenance.

This test is performed because of the violent reactions that take place when an oxidizing agent comes in contact with easily oxidized material. If an oxidizing material is found on a site, it should be segregated from other materials on the site and disposed of separately. In addition, transportation considerations require that oxidizing agents be labelled as oxidizers when transported.

CLASSIFICATION OF CHARACTERIZED MATERIAL

Once all samples have been field tested, the analytical results need to be compiled, preferably by computer. For each sample the following information would be identified: physical state (solid or liquid), radioactivity, oxidation potential, pH, flammability, water reactivity, organic vapor concentration, and any specific analytical results required by the disposal site. PCB concentration should be added following the bench-scale compositing procedure. Based on the data, the characterized samples can be grouped into fairly distinct classes for compositing and/or for disposal. These categories are: radioactive; PCB concentration equal to or greater than 500 ppm; PCB concentration between 50 and 500 ppm; solids; corrosive oxidizers; noncorrosive oxidizers; corrosive acids; corrosive bases; flammables; water reactives; and nonhazardous (Table 1). Additional disposal site analytical requirements may add categories or modify these basic classifications.

Should no further field testing be desired, these classifications allow drums to be segregated for transportation considerations (i.e., to avoid shipping corrosive acids and bases on the same truck). Similarly, the acceptability of materials classed in these categories can be readily identified in regard to the requirements and capabilities of different disposal sites. However, on hazardous waste sites with a large number of drums, this classification scheme lends itself to determining if chemically similar materials within a particular category can be composited for more economical shipping and disposal. Should it be desirable to ship commercially-viable products to a recycling facility rather than a disposal site, this classification method will provide general evidence to confirm or deny the site operator's labelling of product materials.

BENCH-SCALE COMPOSITING

Bench-scale compositing of similar materials is a necessary step prior to on-site compositing of the contents of drums for several reasons. First of all, it provides a general confirmation of the chemical characterization classification of different samples. It also determines the compatibility of materials within a given classification. Finally, it provides a safety margin for subsequent on-site compositing by eliminating incompatible materials from compositing consideration and by identifying possible reactions to expect with full scale compositing.

Not all of the categories in the classification scheme should be considered for compositing. Classes such as radioactive, PCB containing, solid, corrosive oxidizer, and noncorrosive oxidizer probably should be shipped for disposal in intact drums in flatbed trucks. Compositing of corrosive acids or corrosive bases is not always advisable. If compositing is attempted, special care should be taken because of the violent reactions which can occur, particularly when large scale compositing is attempted later. The prime candidates for compositing are flammables, water reactives, and, if necessary, the nonhazardous class.

The basic concept for bench-scale compositing is to take a small quantity of material from samples in the same category, mix them one sample at a time, and observe any reaction. Temperature rise and the generation of gases are the primary reactions to watch for. Reactive samples should be identified and excluded from later on-site compositing. When hundreds of samples are involved in the compositing process, a portion of the composited material should be set aside when moderate quantities have been mixed. This minimizes the possibility that due to a reaction with a later addition, the entire composited quantity has to be discarded, and the entire process redone.

All samples falling within the chemical classification to be composited are staged on a table. A small cup with a thermometer is set up behind a clear plastic shield. A plastic disposable, closed-bulb pipette is used to draw off a small (3-5 ml) representative aliquot from each sample bottle to be placed in the mixing cup. Careful recording is made of each sample added to the batch. As each subsequent aliquot is added to the mixing cup, the temperature is monitored. If a temperature increase of over $10^{o}F$ was detected, the added material is considered to be reactive. Any material which exhibited reactivity with the batch is set aside and identified as a drum to be segregated on-site and disposed of separately. Once a reaction is noted, the tainted batch is discarded, the nonreactive samples are remixed, and the compositing process continued.

After 10-15 samples have been mixed successfully, half the mixture is set aside in a labelled flask as a backup. The remaining mixture will continue to serve as the compositing medium. Another 10-15 samples are added one at a time and examined for any reactivity with the mixture. If a reaction occurs, that particular sample is removed from consideration for on-site compositing, and the entire mixture is discarded. Either all or a portion of the backup mixture (depending on the available quantity) is placed in the mixing cup, aliquots of the nonreactive samples in the latest group are remixed, and the compositing is continued. Again, once 10-15 samples are successfully composited, half of the composited material is added to the mixture in the backup flask. These procedures are maintained until all samples in the group have been tested. This same bench-scale approach is then used to batch other groups and individual products. The final results of the bench-scale compositing are lists of batchable drums within each group and a list of drums to be shipped off-site individually.

The presence of cyanide might be a concern, so a cyanide probe might be set up and added as a step in the compositing process. Due to the sensitivity of the probe, it may be highly desirable to avoid having to test every sample. Instead, once 10-15 samples have been composited in the mixing cup, the mixture is tested for the presence of cyanide. If a positive response greater than 10 ppm (the disposal site level of concern) is noted, each of the samples present in the mixture is tested individually. Samples above the threshold for cyanide are excluded from on-site compositing consideration. It is recognized that sulfides present would interfere with the cyanide test; however, because the procedure to distinguish between cyanide and sulfide is sensitive and time consuming, it may be decided to simply be conservative and assume the cyandie probe reading was due solely to cyanide.

PCBs and flash points are also of concern in the compositing process. A PCB analysis is performed on the final batch mixture for each of the classifications that are composited. Similarly, a closed-cup flash point measurement unit is set up and all final mixtures also have their flash points determined.

ON-SITE COMPOSITING

On-site compositing is performed with drums that have previously been determined to be compatible during the bench-scale compositing procedure. While the bench-scale testing is a simulation of on-site compositing, large scale mixing of materials could promote reactions not observed during the bench-scale compositing procedures. In addition, if the samples used in the bench-scale compositing procedure are not representative of the drum contents, an incompatible material may be added to the composite, causing a reaction. To decrease the magnitude of possible reactions, precautions should be taken when compositing drums. Drums should be composited in the same order as during the bench-scale compositing procedure. Drum materials should be composited slowly, and when the mixing vessel increases or vapors are released, compositing should be discontinued until the materials have completely reacted.

Ideally, a large compatibility chamber or open tank should be used as a reaction vessel. Tank or vacuum trucks may be used if an open vessel is not available. If trucks are used, however, they should be monitored carefully during compositing because violent reactions could damage these trucks. The mixing vessel must be made of materials that do not react with the drum contents. Corrosive materials should be mixed in rubber-lined tanks while organics are best composited in metal tanks.

Drum contents are added to the mixing vessel using a drum grappler, hose and pump, or vacuum truck. A drum grappler is the best method of emptying drums because workers are less likely to contact drum materials.

Once all the compatible materials of one classification are composited, samples of the composite may be taken for further analysis. Since most disposal sites require that the flash point of the composite be measured, this test should be performed on the composite sample. The composite sample should also be used to identify the specific chemicals that were on-site by having a laboratory analyze the sample.

SAFETY CONSIDERATIONS

Personnel safety is an important consideration during any site cleanup. The procedures described for characterization, bench-scale compositing, and on-site compositing must be conducted so that exposure to hazardous substances is prevented. Since personnel performing these procedures are at risk to exposure, appropriate respiratory and skin protection must be provided. Respiratory protection for characterization, bench-scale compositing, and on-site compositing should be provided by a back-mounted gas mask or full face respirator equipped with a combination particulate, organic vapor, and acid gas canister. This level of protection is required because of the highly volatile or toxic gases that may be released during these procedures. A self-contained breathing apparatus should be used if the characterization procedure is conducted inside or in a poorly-ventilated area. If any of these procedures are conducted on-site, personnel must follow the appropriate level of respiratory protection set by the site safety officer. Ambient air monitoring should be conducted during the characterization and compositing procedures. Monitoring will determine if and to what extent these procedures are contaminating the ambient air. In addition, the level of respiratory protection may be upgraded if contaminants in the ambient air are determined to be too high.

Skin protection should be provided by a hard hat or chemical resistant hood, plastic face shield, chemical resistant or plastic-coated coveralls, rubber apron, inner and outer chemical resistant gloves, and steel-toed steel shank rubber boots. This equipment provides splash and spill protection from possibly corrosive and toxic materials. A decontamination area should be provided so that workers may dispose of soiled protective equipment and completely wash themselves. Emergency decontamination procedures should be set up to be followed if a worker becomes grossly contaminated.

Due to the exothermic nature of most chemical reactions, fire is a real danger during characterization and compositing. Chemical fire extinguishers should be readily available to put out small fires. Since large fires could be generated during on-site compositing, local fire departments should be notified prior to full-scale compositing.

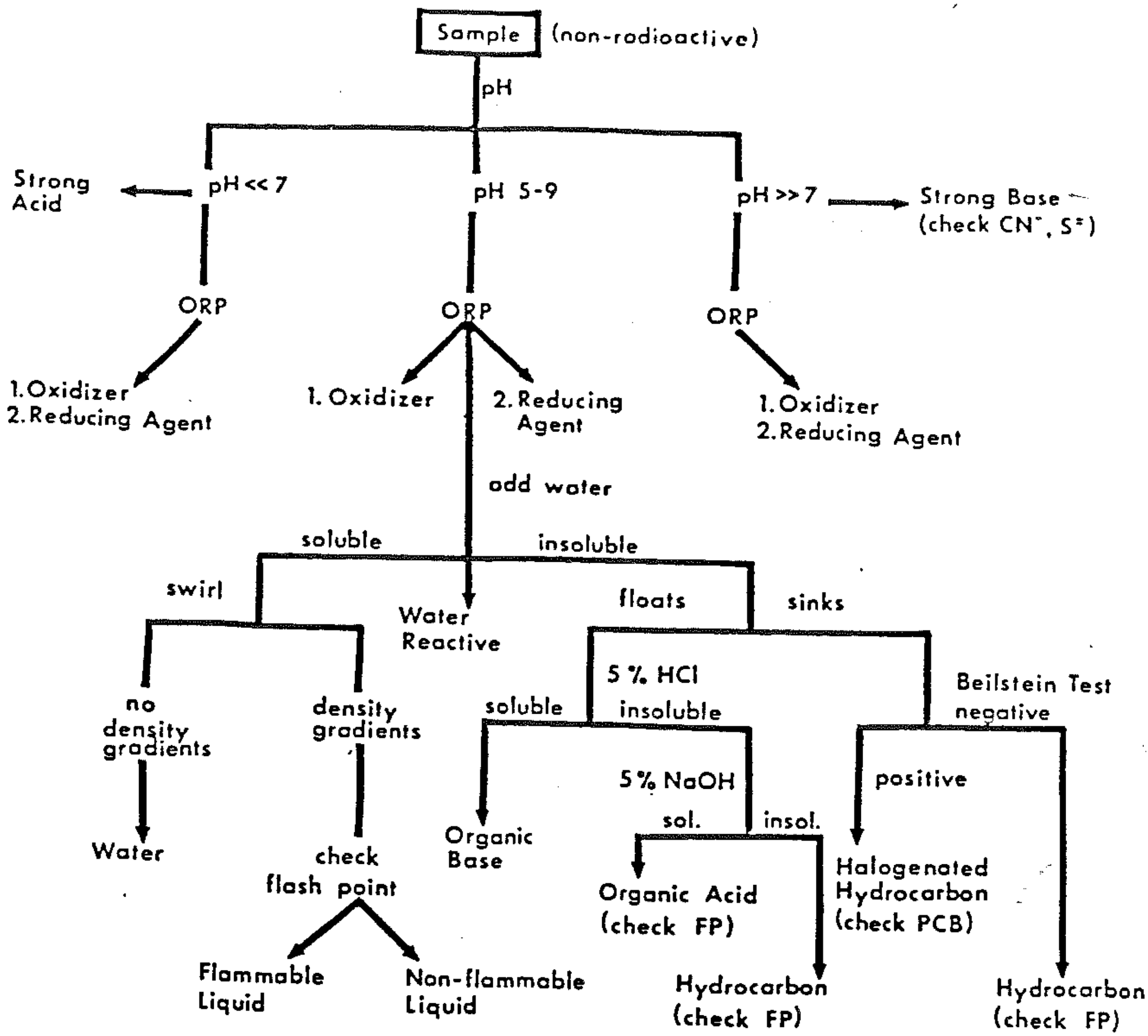
Table 1. Chemical Characterization Classes

SAMPLE CHARACTERISTICS

Classification	Radiation	PCB	Solid	Oxidation Potential	pH	flammability	Water Reactive
Radioactive	Yes	*	*	*	*	*	*
PCB ≥500 ppm	No	≥500 ppm	*	*	*	*	*
PCB 50 ≤ <500 ppm	No	50≥ and <500 ppm	*	*	*	*	*
Solid	No	<50 ppm	Yes	*	*	*	*
Corrosive Oxidizer	No	<50 ppm	No	≥50 mV	0-2	*	*
Noncorrosive Oxidizer	No	<50 ppm	No	≥50 mV	3-14	*	*
Corrosive Acid	No	<50 ppm	No	<50 mV	0-2	*	*
Corrosive Base	No	<50 ppm	No	<50 mV	12-14	*	*
Flammable	No	<50 ppm	No	<50 mV	3-11	Yes	*
Water Reactive	No	<50 ppm	No	<50 mV	3-11	No	Yes
Nonhazardous	No	<50 ppm	No	<50 mV	3-11	No	No

* Result irrelevant; prior category has greatest importance

COMPATIBILITY TREE



SCREENS FOR:
1. Strong Acids
2. Strong Bases
3. Oxidizers
4. Reducing Agents
5. Cyanides & Sulfides
6. Water Reactives
7. Flammable Liquids
8. Halogenated Hydrocarbons
9. PCB's

SPECIFICATIONS FOR LABORATORY SERVICES FOR CCCI

Following are detailed functional requirements for the laboratory services for CCCI. If an item is noted as "desirable," it means that CCCI prefers, but not absolutely requires, that the laboratory's approach meet the specification. The services and specifications contained herein are to be considered mandatory, and omitting a discussion of any one may cause a report to be deemed non-responsive.

For those specifications denoted with an asterisk "*," the laboratory must give a more detailed description of the approach taken to meet the specification.

The organization and sequence of the laboratory's response to these specifications should be parallel to the structure of this document except where following the rule would lead to an inappropriate or confusing report.

Monitoring Parameters

The specific parameters covered by this plan are as follows:

Ignitability	Antimony	Volatile Organics
Corosivity	Arsenic	Semi Volatile Organics
Reactivity	Barium	TOC
EP Toxicity	Cadmium	Total and Amenable Cyanide
	Chromium	TOX
	Lead	Sulfides
	Mercury	pH
	Nickel	PCBs
	Selenium	Primary and Secondary
	Silver	Drinking Water Standards
	Beryllium	
	Thallium	
	Copper	

Each sample shall be assigned a control number. When possible, CCCI or the field sampling team shall establish the sensitivity required for the analytical tests. This will be possible in cases where CCCI is aware of the quantity of suspected contaminants and hazardous waste on-site.

It shall be necessary for the CCCI to acquire the necessary sample containers and the appropriate preservatives. 40 CFR 136 Table II shows standard sample preservation methods. CCCI shall ensure that, as part of the sampling plan, sufficient sample is available for analysis (e.g., 100 grams for EP toxicity). The standard procedures regarding sample size, type of bottle, and preservatives are to be used.

The sampling and analytical procedures to be used for this project are based on those described in "Test Methods for Evaluating Solid Waste" (SW-846) and "Methods for Chemical Analysis of Water and Wastes" (EPA-600/4-79-020).

CONTAINERS AND PRESERVATIVES

A. Containers

1. Mandatory Specifications

a. Any sample containers shall be provided in sufficient quantities to allow timely sample collection.

b. Sample containers shall not be contaminated or be capable of reacting with the samples. This specification must be documented in some manner.*

c. Container numbers shall be adequate to provide sufficient sample for the required analyses.

d. Glass 250-ml or 500-ml, screw-cap containers fitted with Teflon lined caps are required for Total Organic Halogen analysis. A glass 40-ml, screw-cap vial fitted with a Teflon faced, silicone septum is required for Task 5 organics analysis. Two vials are required per sample to be collected. A one liter/one quart, glass, narrow-mouthed, screw-cap bottle with Teflon lined cap is required for Task 6 organics analysis of water samples.

e. A one liter/one quart glass wide-mouthed container with a polypropylene cap is the required container for metals and other inorganic parameter analyses. This shall also be the required container for extractable organics solid samples (soils, sludges, etc.)

f. Shipping containers to be used shall be capable of maintaining samples at 4°C and arriving at the contractor's laboratory within 24 hours. All such shipping containers must meet DOT and any other apropriate regulations.

g. One container shall be available for each preservative to be used for each sample to be collected. More than one container may be used from time to time.

h. One container shall be available for each task to be used for each sample to be collected. More than one container may be used from time to time.

2. Desirable Specifications

a. Sample containers should be prepared as described in the methods for analysis for each parameter.

ATEC Associates, Inc.

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☐ 13450 South Cicero Avenue, Unit C • Crestwood, Illinois 60445 (312) 388-0895

May 23, 1986
File 6-3030

Norman Hjersted, President
Conservation Chemical Company of Illinois
5201 Johnson Drive
Suite 400
Mission, Kansas 66205

<u>REPORT</u>
Site Assessment and Closure Plan
Conservation Chemical Company of Illinois
Gary, Indiana

Dear Mr. Hjersted:

We have completed our site assessment and closure plan for the above referenced project.

This report includes our assessment of the site hydrogeology, closure plan, post closure plan, ground water assessment plan, and cost estimates. Our work is summarized in Section 1.0. Detailed discussions are presented in the following sections of this report. Supporting information is summarized in the tables section and presented in detail in the appendices.

This report includes relevant project information obtained by others, and is therefore a fairly complete record of work performed at this site.

Very truly yours,
Atec Associates, Inc.

Steven Stanford ip

Steven Stanford
Geologist

John W. Weaver II

John W. Weaver II, P.E.
Vice President

SS:JWW/ls

SITE ASSESSMENT AND CLOSURE PLAN

GARY, PLANT

CONSERVATION CHEMICAL COMPANY OF ILLINOIS

GARY, INDIANA

TABLE OF CONTENTS

REPORT

1.0 INTRODUCTION

1.1 Purpose

This site assessment and closure plan was prepared for the Gary plant, Conservation Chemical Company of Illinois. This work was undertaken to compile existing information, characterize the various facilities, perform an environmental assessment, and develop a closure plan. This site assessment and closure plan is based on field work performed by others. No additional testing or field work was performed.

The goals and performance standards of these outlined activities are: minimize the need for further maintenance and control, minimize or eliminate, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall or waste decomposition products to the ground or surface waters or to the atmosphere.

1.2 Organization

This closure plan is for the Gary, Indiana plant of the Conservation Chemical Company of Illinois (CCCI) as a whole, considering the discreet storage tanks, other storage facilities, and each general type of waste present on the site. Our work is summarized in Section 1.0. Detailed discussions are presented in the following sections of this report. Supporting information is presented in the "Tables" and "Figures" sections, and presented in detail in the appendices.

To be consistent with work performed by others, we have adopted the tank numbering plan devised by IT Corporation. In addition, each tank has been field numbered using this system by IT Corporation.

1.3 Work Summary

Atec Associates, Inc. was retained to develop a closure plan for both the site storage facilities and the site subsurface.

Our closure plans are based principally on technical information and reports prepared by U.S.EPA contractors. These reports include a Site Assessment by Weston Consultants, an Emergency Action Plan prepared by Weston Consultants, a Preliminary Sampling Investigation prepared by CH2M Hill and Ecology & Environment, and the Environmental Response Team Survey of Lagoon Depth and Composition prepared by the U.S.EPA. For additional information, please refer to the "References" section.

The Site Assessment by Weston Consultants was contracted by the U.S.EPA to determine whether an emergency situation existed at the facility based on imminent hazards to human health and the environment. The Emergency Action Plan by Weston Consultants was contracted by the U.S.EPA based on the recommendations of Weston Consultants that more work was necessary and that the hazards of the site were "Severe" (1). The Preliminary Sampling Investigation was contracted by the U.S.EPA for purposes of ranking the site for the National Priority List.

Other work providing basis for our closure plans includes the CCCI Part B Application, geologic literature, site soils and geologic information gathered by James M. King, Hydrogeologist, and past subsurface geotechnical work performed by Atec Associates in the surrounding area.

1.4 Background Information

The CCCI site occupies a triangular parcel of approximately four acres in Gary, Indiana. The site is located at 6500 Industrial Highway and is approximately one-quarter mile southwest of where its access road joins Industrial Highway (2). The site is bound on the west and southeast by the Elgin, Joliet and Eastern Railroad and on the northeast by an industrial lot filled with miscellaneous soil, masonry, and scrap metal. The Gary Municipal Airport is located immediately southeast of the site.

Until December 1985, the site functioned as a chemical recycler, producing ferric chloride (iron-salt) coagulants from waste pickling liquor. CCCI conducted its ferric chloride operations from 1967 to 1975 and resumed production in 1980. Prior to 1967, the site was owned and operated by the Berry Oil Company, a petroleum oil refinery company. Remnants of the oil refinery operations remaining on-site include a number of drums and tanks, the office/shop building, two concrete-lined pits, a distillation column, a forced draft cooling tower, and two waste disposal basins (2).

The site contains numerous bulk tanks of various sizes which are utilized for storage purposes. Trash and refuse have been generated by various outside contractors, placed in drums, and remain on-site.

1.5 Summary of Findings

We have completed the closure plan and the first phase of a ground water assessment plan. The work performed, our analyses, and our findings are presented in detail in the following sections and are summarized in this section.

Generally, our work has indicated that there are a variety of chemicals, materials, and wastes stored and disposed on site. The subsurface conditions consist of about 40 feet of fine to medium grained dune and lake sands. The sand layer is underlain by 40 to 80 feet of a low permeability of clay till, which in turn is underlain by dolomite bedrock. The site is located in a heavily industrialized area, and the ground water in the upper sands is regionally of poor quality, and little used for potable purposes.

Because of the nature of the operations at the facility and the hydrogeologic setting, our technical approach for closure is to remove the more toxic, flammable, and reactive wastes from the site for treatment, recycling, or incineration, as outlined below:

1. Neutralized acid sludge may be closed on-site or disposed off site, pending results of recent analytical testing.

2. Oil, PCBs and water in tanks 19 and 22 will be treated on-site with metallic sodium, and the oil recovered.

3. Cyanide solutions will be destroyed on site.

4. Chlorinated solvents will be disposed off-site.

5. Silicatetrachloride will be disposed off-site.

6. Pickle liquor will be disposed off-site.

7. Drums of miscellaneous materials will be disposed off-site.

The less contaminated soils and less noxious wastes will be left on site and contained in a slurry wall confinment structure.

Subsurface conditions are inducive to slurry wall construction, and provisions are included in the closure plan for the design of the slurry mixture, such that it is resistive to chemical degradation by the present ground water contaminants. A surficial cap will reduce the potential for receptor contact with waste materials and reduce perculation into the subsurface.

Regarding the ground water assessment, we recommend an initial phase including installation of three sets of down-gradient monitoring wells and associated analytical testing. Subsequent phases may involve additional wells both on and off-site, to assess the horizontal extent of migration, and to identify on-site and off-site sources.

We expect the closure activities to take approximately six months once construction has begun, and at an estimated cost of $2,500,000. Based on existing information, 30 years of post closure monitoring may be performed at an estimated cost of $250,000.

2.0 SITE CHARACTERIZATION

2.1 General

The CCCI Plant is located in a heavily industrialized portion of Gary, Indiana. The regional site location is presented in Figure 1.0. The site property measures approximately 800 by 50 by 500 feet. Our report concerns the entire property and some of the surrounding areas.

The plant is not currently in operation, but the site is presently guarded. Several types of wastes, the concern of this report, are presently stored on-site in various tank facilities.

A number of the tanks currently used date from the previous refinery operation, and a number of tanks were also purchased and installed subsequent to 1967. Solid wastes have also been disposed in basins on or adjacent to the site.

2.2 Surface Conditions

The site topography is relatively flat, ranging in elevation from 595 to 590 feet. Due to the permeable nature of surficial soils, little water drains freely over the surface. At times when surface drainage does occur, the surrounding areas drain southward toward the Grand Calumet River (3).

2.3 Subsurface Conditions

2.3.1 Basis

The data base for the subsurface conditions presented in this section is field work performed by others, our past field work performed in the area, geologic information compiled by others, and published geologic literature.

2.3.2 Geology

The site lies within the Calumet Lacustrine Plain. Approximately 150 feet of unconsolidated deposits overlie bedrock of the Niagran series (4). From the surface to a depth of about 40 feet, the unconsolidated deposits consist of sand mixed with some fine gravel in the form of bars, spits, beach ridges, and some dunes.

The bedrock consists of closely jointed dolomites and cherty limestones of the Niagran Series, Middle Silurian system. The bedrock dips southeasterly along the eastern limb of the Cincinnati Arch.

2.3.3 Soils

Some fill materials have been placed at the site. Surficial soils therefore consist of slag, gravel, and cinders in some places. The underlying natural soils consist primarily of silty, fine to medium sand.

This upper soil unit is part of the Atherton Formation (in Indiana) and occurs in ridged belts that roughly parallel the present Lake Michigan shore line (5). These ridges are readily visible in the U.S.G.S. topographic map, Figure 1. Narrow belts of muck or peat occur commonly between the modern and relic dunal ridges.

Beneath the dune and lacustrine sands is approximately 100 feet of pebbly, sandy, silty, clay till containing discontinuous lenses of sand and gravel. This till extends almost to the underlying bedrock surface, upon which rests a thin basal sand and gravel interval. The contact between the till and the upper sand unit dips northward toward Lake Michigan at about 10 feet per mile (4).

2.4 Hydrogeology

2.4.1 Regional Hydrogeology

According to state geological survey literature, the ground water table is quite flat in this area (6). This fact is consistent with the small surface relief. The regional potentiometric surface (water table) is presented in Figure 7.

2.4.2 Site Hydrogeology

The upper sand unit is known as the Calumet Aquifer. This aquifer is unconfined and approximately 40 feet thick. Since ground water occurs approximately 7 feet beneath the surface, the aquifer has a saturated thickness somewhat less than 40 feet. Hydraulic properties of the aquifer are as follows: Hydraulic conductivity is about 3×10^{-3} to 5×10^{-2} cm/s, transmissivity is approximately 30 cm^2/s, and the storage coefficient is about 0.12, characteristic of unconfined conditions (6).

The site lies near a suspected ground water divide from which flow is northward toward Lake Michigan and southward toward the Grand Calumet River. Due to this fact, it is difficult to determine the actual ground water flow direction without specific site measurements. Ecology & Environmental concluded from their work performed at the site in 1984 that the ground water flow direction is south-southwest, towards the river. They measured a hydraulic gradient of 0.003 cm/cm.

Using the measured hydraulic gradient of 0.003 cm/cm, assuming a porosity of 0.3, and hydraulic conductivity of 4×10^{-2} cm/s, the average linear seepage velocity of ground water flow beneath the site is calculated to be 1.1 feet per day.

Due to the permeable nature of the surficial soils, the Calumet Aquifer is recharged principally by direct infiltration. The standard assumption (American Society of Civil Engineers) of about one third infiltration and two thirds evapotranspiration and run-off, indicates about 12 inches of annual precipitation is available for ground water recharge (5).

2.5 Surrounding Conditions

This section addresses land and water usage in the surrounding areas, particularly down-gradient from the site.

2.5.1 Land Usage

The site is located in a highly industrialized and commercialized area. A lot filled with metal scrap, masonry, miscellaneous soil, a defunct electroplating facility, and a scrap yard lies immediately north of the site. Further north lies a major steel mill. The nearest residence is approximately 1.1 miles northwest of the site.

The Gary Municipal Airport lies immediately eastward, followed by Midco II (a CERCLA site).

Immediately west and southwest lies a wide area of swamp which received an estimated one million cubic yards of petroleum tank bottoms from several sources (7). Further south and southwest resides a sanitary landfill, followed by another landfill (a CERCLA site). Approximately 2,000 feet west lies a major oil storage and refining facility.

2.5.2 Water Well Survey

The primary water supply source for the area surrounding the Conservation Chemical Company of Illinois is Lake Michigan. Although regional ground water is not a primary source of drinking water, 59 water supply wells were identified within a 3-mile radius of the site (4).

3.0 HYDROGEOLOGIC ASSESSMENT

3.1 General

Our hydrogeologic assessment is organized to first consider the soil characteristics, both physical and geochemical, and then the existing water quality data. We then discuss known migration and future potential migration.

The following assessments are based on information in this report, our experience in the area and professional judgement.

3.2 Soil Properties

3.2.1 Physical

We have performed several grain size tests on soil samples obtained during our past subsurface explorations in the area. The near surface deposits consist of uniformly-graded, wind deposited fine sands with a silt and clay content ranging from 2 to 7 percent. In this area, it is our experience that the upper sand deposit becomes finer and more silty with depth. Also, the underlying clayey tills are of low plasticity, well graded, and exhibit hydraulic conductivities in the range of 10^{-7} to 10^{-8} cm/s.

3.2.2 Geochemical

The upper sands at the site contain large amounts of quartz (silicon dioxide), quantities of muscovite, zircon and feldspars. The sand mineral lattice is very stable, and not subject to geochemical degradation.

The underlying lake clays and clay tills at this site are typical of clays that we have geochemically tested on numerous past projects. These clays are predominately illites and kaolins, and contain little montmorillonite. Thus, the relatively low hydraulic conductivity of the tills results from low swelling clay particles and a favorable particle size gradation. This results in soils less susceptible to degradation by chemical leachates than more plastic montmorillonite clays. Our past work with geochemical compatibility has indicated no measurable increase in hydraulic conductivity (permeability) in similar types of glacial clays when exposed to ground water with solvent concentrations under one percent.

3.3 Migration Concerns

3.3.1 Surface Water

Surface water near the site has been tested in one location by the U.S.EPA. Test results indicated trace quantities of methylene chloride, the pesticide 4,4-DDD, and an apparently elevated iron concentration. For detailed information, refer to Tables 2 and 3. Due to the sampling location (off-site to the north) and the large quantity of leachable fill placed immediately north of the site, the encountered contaminants may have originated in part from off-site wastes disposed by others.

The nearest surface water to the site is the Grand Calumet River, approximately Ø.8 miles to the south. Due to the permeable surficial soils we believe that surface migration at this site is not of concern. For this reason we also believe that the likelihood of surface migration to any significant surface water is remote.

3.3.2 Ground Water

Analytical testing performed by the U.S.EPA indicates that a variety of organic compounds are present in the ground water. Several metals were also detected at concentrations somewhat over the primary drinking water standards. Detailed information is presented in Tables 2 and 3.

Although further study is needed to accurately determine the source, rate, and extent of alleged contaminant migration, some preliminary conclusions may be drawn from the existing data and information.

1. The average ground water flow velocity through the aquifer is approximately 1.1 feet per day, with an approximate flow direction of south-southwest.

2. Due principally to the industrial nature of this region and years of poor past environmental practices in the region as a whole, the water quality of the Calumet Aquifer is generally poor. Since four (4) of the monitoring wells installed by the U.S.EPA are apparently up-gradient from all or most of the site, analytical data from these wells may reflect the background quality of the aquifer.

3.3.2.1 Vertical Extent

The vertical extent of the chemical migration will be limited by the clay aquiclude which is at a depth of approximately 40 feet. We expect the clay layer to be about 50 feet thick at this site. Its continuity and low hydraulic conductivity characteristics are well documented both in our experience and in the published literature.

3.3.2.2 Horizontal Extent

Site soils consist of permeable sands and gravels. Ground water is recharged by direct infiltration. The unconfined upper aquifer is thus susceptible to contamination through potential spills or releases. However, the fine sands provide natural filtering action which aids the attenuation of contamination with time.

In addition, the impact of off-site contaminant migration has likely been mitigated by several circumstances. First, the Calumet Aquifer is little used for potable water in this area. Second, the Calumet Aquifer possesses generally poor water quality throughout the area.

4.0 CLOSURE PLAN

4.1 General

We propose the following closure plan to reduce to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall or waste decomposition products to the ground or surface waters or to the atmosphere. In addition, the need for future maintenance is also reduced. The post-closure activities are discussed in the following section.

As discussed in Section 3.0 of this report, and in site assessments performed by others, hazardous wastes are currently stored on-site, and some subsurface contamination is known to exist. Although some subsurface migration has been detected at the site, most of the waste inventory is currently stored in above ground tanks. The following subsections describe general procedures by which the various plant facilities are to be closed and the subsurface closed and monitored. These subsections in aggregate provide a plan to close the facility as a whole. Our technical approach is presented below.

4.2 Technical Approach - Storage Tanks

A total of approximately 60 tanks are present on-site. The tanks range in size from approximately 2,400 to 1,500,000 gallons. The majority of tanks are in the range of 15,000 to 25,000 gallons capacity. Most of the tanks are constructed of steel, fewer constructed of rubber-lined steel, and a small number constructed of fiberglass. Tank locations are presented in Figure 4. For detailed information on each tank, refer to the CCCI Part B Application, Section D.

4.2.1 Waste Inventory

Inventory data provided in this closure plan may be considered the estimated maximum quantity of each waste stored during the life of the facility since plant operations have indefinitely ceased. Recently, some stored materials have been shifted from tank to tank by U.S.EPA personnel, but overall inventory data is generally accurate as presented herein.

Six general types or categories of liquid materials are currently stored in tanks on-site, these include:

1. Approximately 300,000 gallons of neutralized acid sludge stored in Tank 20
2. 500,000 gallons of PCB contaminated fuel oil, asphalt, and approximately 166,000 gallons of water in Tanks 19 and 22 (all or most of the material stored in tank 19 has been recently transferred to Tank 22 as part of an "immediate endangerment response" by the U.S.EPA)
3. An aggregate of 150,000 gallons of various cyanide solutions in approximately 15 tanks (contents of the distillation column were recently transferred to other tanks on site)
4. An aggregate of 42,300 gallons of chlorinated solvents in 6 tanks,
5. 2,500 gallons of silica tetrachloride in Tank 43
6. 1,400 gallons of ferric chloride and pickle liquor in 4 tanks

The quantities and locations of materials are presented in Tables 4 through 9.

4.2.1.1 Waste Characterization

Substantial existing analytical data on tank contents is included in Tables 4 through 9. IT Corporation, working under contract for the potentially responsible parties (PRPs) has recently completed extensive sampling of tanks containing cyanide and metal hydroxides. Results from these analyses are not available at the time of this writing, but will later be available and incorporated as an addendum to this closure plan.

4.2.2 Neutral Acid Sludge - Disposal

The neutralized acid sludge in Tank 20 has not been subjected to detailed previous analysis. The tank was, however, recently sampled by the PRP contractor, and a detailed characterization is expected. For purposes of this closure plan, the material has been considered hazardous. If the material is characterized as non hazardous, closure will be less complex than described below.

Materials in this tank are suspected of having a high solids content which may add difficulty to the materials handling process. Initial attempts of material transfer should be made with a positive displacement pump. If the material proves unpumpable, a port may have to be cut into the side of the tank and the material removed using a front-end loader (2). Final removal will likely have to be performed manually.

As proposed in the 1985 U.S.EPA Emergency Action Plan, these materials may be solidified using a lime kiln dust. This process can be undertaken using lined sludge boxes and backhoes to thoroughly mix the materials. Lime kiln dust would be added at a 1:3 ratio with the material. For disposal purposes, representative samples of the solidified wastes would have to be analyzed. This post-treatment analysis is a typical requirement of hazardous waste land fill operators. Upon the selection of a licensed, hazardous waste landfill, the solidified materials may be transported from the site in lined dump trucks (2). Cost estimates for landfilling are presented in Section 6.0.

Alternatively, the neutral acid sludge in tank 20 may prove treatable using Type C flyash, cement kilndust, and/or portland cement. Pilot studies and investigation would be necessary to determine feasibility, but if this method proves practical, the sludges can be stabilized cost effectively. In our experience, treatment of similar waste with Type C flyash has yielded stable products with strength characteristics similar to concrete. Since neutral acid sludge solidified in this manner would be stabilized and chemically fixed, this material may be disposed on-site, with the chief restriction being placement at an elevation above the water table. Cost estimates for flyash treatment are presented in Section 6.0.

4.2.3 Oil, PCB's, and Water - Disposal

These materials are stored in Tanks 19 and 22, but as discussed previously, some or most of the material stored in Tank 19 has been recently transferred to Tank 22. As anticipated in the U.S.EPA Emergency Action Plan, a high powered suction pump such as a "supersucker", or a positive displacement pump are to be used to transfer petroleum materials from each of these tanks into over-the-road trucks for transport. Following transfer into each tanker, materials may be analyzed for PCBs.

Disposal of PCB contaminated oil and water shall be accomplished using treatment with metallic sodium. As with incineration, this process will lead to the complete destruction of the PCBs. Prior to acceptance, the effectiveness of this method shall be adequately demonstrated. The nearest appropriately licensed facility of this type is located in Kansas City, Kansas. Disposal Systems, Inc. has indicated, however, that on-site treatment with a portable unit will be cost effective in this case.

Disposal of the PCB contaminated materials determined untreatable with Sodium may be accomplished by off-site incineration at an appropriately licensed facility. Due to permitting difficulties, we do not consider on-site incineration a realistic alternative.

Since both of these methods destroy the PCBs, they constitute equally effective disposal alternatives. Both methods should, therefore, be viewed as equally acceptable to the interested regulatory agencies. Estimated costs, which assume 80 percent of the material is treatable and 20 percent will require incineration, are presented in Section 6.0.

4.2.4 Cyanide Solution - Disposal

Liquid cyanide wastes are currently stored in approximately 12 tanks on the site. As proposed in the U.S.EPA Emergency Action Plan, in-situ treatment and destruction of the cyanide may prove cost-effective and efficient. The amount of cyanide treatable on-site will depend on the chemical characteristics of the material. Analysis will be required to determine the treatability of materials in each tank.

The specified method of treatment is destruction with hypochlorite. This process leads to the complete oxidation of the cyanide through chlorination. A detailed description of this process is contained in the 1985 U.S.EPA Emergency Action Plan.

For materials determined untreatable on-site, off-site treatment and disposal by a licensed contractor may be necessary. Estimated costs, which assume the material is treatable on site, are included in Section 6.0

4.2.5 Chlorinated Solvents - Disposal

Chlorinated hydrocarbon solvents are currently stored in 6 tanks on the site. These materials may be removed from each tank using either the bottom valves or by accessing the tops of tanks with inoperative valves. The materials may be loaded into over-the-road tankers and transported to a RCRA licensed disposal contractor for fuel blending or incineration. Fuel blending is far more cost effective than incineration, but cost estimates for fuel blending assume a chloride content under 10 percent. Cost estimates for transport and disposal are presented in Section 6.0.

4.2.6 Silica Tetrachloride - Disposal

Tank 42 currently holds approximately 2,500 gallons of silica tetrachloride. This material may be removed from the tank using either the bottom valve or accessing the top of the tank. The material shallbe loaded into a tanker and transported to a RCRA licensed disposal contractor for incineration. Due to the volatile and reactive nature of this material (the material reacts violently with water) it will be removed first, and special care will be necessary in handling. Cost estimates for transport and disposal are presented in Section 6.0.

4.2.7 Pickle Liquor and Process Products - Disposal

Tanks 46, 42, 50, and 51 contain approximately 1,400 gallons of pickle liquor. In addition, approximately 17,000 gallons of rain water and process acid are stored in tanks 40 and 41. The concrete process sump contains primarily water, but may include some pickle liquor related materials. These materials may be removed from the tanks and pumped from the process sump into tankers. These materials may then be transported to a licensed disposal contractor, or as anticipated with the process acid, sold as product. Cost estimates for pickle liquor transport and disposal are presented in Section 6.0.

4.2.8 Drums - Disposal

The approximately 154 drums of various materials will be shipped to appropriately licensed disposal facilities based on characterizations by the U.S.EPA Environmental Response Team. The principal hazardous characteristic of these materials is ignitability. Results of drum sampling and analysis are included in the "Laboratory Data/Soils" Appendix.

4.2.9 Decontamination Procedures

Based on the general types of waste residues that are expected in the various tanks, general decontamination procedures are presented below. These procedures are flexible in that various levels of cleanup may be accommodated, based on whether tanks will be demolished and closed on-site, salvaged, or sold for scrap.

1. Work performed inside tanks or other confined spaces is inherently dangerous, and proper health and safety procedures must be followed. Positive displacement ventilation shall be provided. We recommend that a licensed industrial hygienist or his representative be present during all work in confined spaces.

2. Subsequent to the removal or liquid materials, some solid residue is to be expected in all or most of the storage tanks. Solid residues will be removed manually or using suitable machinery. Collected residues (including rinse waters) must be analyzed and disposed of accordingly.

3. Tank 20, containing neutralized acid sludge may be decontaminated using high pressure water blasting.

4. Tanks 19 and 22, containing oil, PCBs and water will require high-pressure, hot water; or sand blasting to remove clinging asphaltic residue. Sand blasting may be preferable since it will aid in solidifying the materials.

5. Decontamination of cyanide storage tanks will include rinsing with hypochlorite solution.

6. Tanks used for solvent storage shall be decontaminated by blasting with an appropriate detergent solution. Tanks too small for entry may be treated by partially filling with detergent solution and mechanically agitating.

7. Decontamination of pickle liquor storage tanks and the process sump shall be performed using a high pressure water rinse.

8. Equipment that has contacted the above referenced wastes shall be cleaned on a decontamination pad using an appropriate cleaning agent and high pressure steam cleaning. A detail of the decontamination pad is shown in Figure 9. Rinse waters from decontamination operations shall be collected, analyzed and disposed of accordingly.

9. Upon termination of the closure activities, the decontamination pad will be dismantled and hauled to a licensed land fill.

10. Testing, decontamination, or removal of potentially contaminated site soils will be unnecessary since such material is to be closed on site, as described below.

4.3 Technical Approach - Earthen Basins

Four earthen basins are to be closed, specifically: 1) the pie-shaped basin, 2) the off-site basin, 3) the storage Tank 19 confining basin, and 4) the storage Tank 22 confining basin. Analytical testing performed by U.S.EPA Contractors does not explicitly indicate inorganic compound (metals) concentrations in excess of the regulated threshold (RT) levels. EP Toxicity test performed by CCCI indicates strictly non-hazardous concentrations of metals. EP toxicity data is presented in Table 9. In addition, PCB concentrations were all reported well below the RT concentration of 50 ppm. The Priority Pollutant Metals analysis performed by U.S.EPA contractors, reported as total content, does, however, indicate some elevated metals content. U.S.EPA data on the earthen basins is presented in the "Laboratory Data/Soils" Appendix.

According to CCCI, the materials placed in the off-site basins and in the pie-shaped basin are similar and consisted principally of iron hydroxides and oily emulsions. Reportedly, the dike around tank 19 has been overtopped by rain water and spillage has occurred into the tank 22 confining basin. Due to leakage from Tank 19, its confining basin exhibits oil staining.

4.3.1 Closure

Based on existing data, we intend to perform closure as described herein. There are several methods for mitigating contaminant migration and reducing future maintenance requirements at this site. Since the subsoils are granular and exhibit relatively high hydraulic conductivities (permeabilities), the ground water recharge in the area is by direct infiltration. Therefore, the major concern is isolating potential contaminant sources from the surrounding environment.

The closure plan shall consist of: capping the basins with relatively impermeable materials (compacted clay) the installation of a slurry wall, and in-situ stabilization by mixing contaminated surficial soil with Type "C" flyash, cement-kiln dust, and/or cement. Stabilization will, in addition to immobilizing the contaminants, subsequently reduce the permeability. The earthen basins and potentially contaminated soils will be closed using a combination of the three methods.

Prior to construction, lime or other suitable material shall be placed and disked-in to raise the pH of the soil (or waste). Note that lime should be used since stabilization is to be completed using flyash. Since flyash is a pozzolanic material, it will react with the lime (calcium hydroxide) producing an increased resistance to sulfate-attack and ultimate compressive strength.

4.3.1.1 Construction Considerations

In general, the construction described above can be completed in "dry" conditions because of the groundwater depths. The fill hauling trucks should be routed on-site to prevent contact with waste materials, so that decontamination of the trucks will not be required.

However, equipment that has contacted the waste shall be decontaminated using high pressure steam cleaning on a decontanination pad, constructed as shown in Figure 9. Rinse waters shall be collected, analyzed, and disposed accordingly. Upon completion of construction activities the pad will be dismantled and hauled to a licensed landfill.

Protected, surveyed benchmarks will be installed prior to construction activities, and maintained during post-closure activities.

Capping Material

Once a source of clay material is identified, physical laboratory testing should be performed to evaluate its acceptability for use. Clay cap fill material should be free of organic matter, have a plasticity index between 5 and 30, a minimum particle size of three-inches, have at least 40 percent fines, and have a Standard Proctor dry density in excess of 90 pounds per cubic foot. Cap material should be compacted to at least 92 percent of the maximum dry density, at a minimum moisture content of 2 to 5 percent greater than optimum, as determined by the Standard Proctor Compaction Test (ASTM D 698).

To facilitate the recommended compaction of cap material, we suggest that the fill be placed and compacted in lifts. To monitor compliance with the recommended density standards, we recommend that in-place density tests be performed at a frequency of 4 tests for every acre of compacted fill area, per foot of fill. The consistency of the borrow material should be checked at the borrow area, ahead of the borrow excavation, to preclude the use of unsuitable materials. We recommend one grain size test (percent passing 200 sieve only) be performed at a frequency of one test for every 400 cubic yards of material.

Stabilization of Materials

Prior to stabilization construction operations, laboratory-bench and batch tests should be performed to characterize mixing ratios such as stabilization material/soil ratio, water/stabilization material ratio, and lime requirements if used. These mixing ratios are a function of the stabilization material, its source, the organic content of the soils, and the type of organics present in the wastes.

Slurry Wall Construction

The slurry wall shall be located as shown in Figure 8. It shall penetrate the clay cut-off layer the minimum specified depth of at least three feet, as shown in Figure 10. The wall shall provide for a continuous barrier with no "windows" or other defects which impare its cut-off capacity. The wall shall be joined with the clay cap as shown in Figure 10, and be extended beneath the railroad tracks as shown in Figure 11.

A slurry wall mix shall be designed that is resistive to chemicals in the ground water and provides a coefficient of permeability of 1×10^{-6} cm/s or less. Leachate compatibility and permeability will be demonstrated by performing at least three slurry wall/leachate compatibility tests using the triaxial permeability procedures as described by the Army Corps of Engineers. The samples shall be consolidated to representative confining pressures, and at least three pore volumes of leachate shall be passed through the slurry mix sample. The coefficient of permeability shall not increase by more than one order of magnitude, and shall remain less than 1×10^{-6} cm/s to be considered compatible and suitable.

The slurry shall be uniformly mixed and fully hydrated prior to its insertion into the trench. Allowance for mixing and hydration in the trench will not be allowed. Sluicing with water will not be permitted. During slurry wall construction, the level of slurry in the trench shall be maintained at least three feet higher than the ground water level. The slurry shall be mixed in an enclosed mixer.

If the conventional backhoe dug soil-bentonite slurry wall method is used, the trench backfill material type shall have sufficient fines to prevent migration of the filter cake. Any mixing of backfill material shall be performed in an enclosed mixer or pug-mill arrangement.

The minimum three foot penetration into the clay cut-off layer will be demonstrated by probing, boring, or other method at no more than 100 foot intervals. The existing boring information may be used, in part, for this purpose to reduce the need for additional borings.

At least two weeks prior to construction, a quality assurance testing program will be submitted suitable for use with the slurry wall design. This program should be detailed and monitor compliance with the wall design specification and shall include testing of the wall material and trench backfill material. The quality assurance program shall include periodic on-site testing (at least twice per shift), and certifications from materials supliers.

Vegetative Cover

A vegetative cover is required to perpetuate the clay cap or stabilized material and provide erosion protection in gently sloped areas.

We recommend the topsoil, seeding materials, and placement practices conform to Indiana State Highway Specifications (Section 621.0 and 913.0, 1978 edition) unless otherwise modified herein.

A minimum two-inches of topsoil, or equivalent vegetation growth layer, should be placed over the clay cap material. Extremely sandy topsoils should be avoided in sloped areas due to their susceptibility to erosion. The pH should be between 6.2 and 7.4. Agricultural lime can be added as necessary to modify the pH. This material should be placed in a smooth and compact manner.

We recommend the seeding program consist of a mixture of tall fescue grasses and legumes (clover or alfalfa). The legumes will provide a quick cover for erosion protection and the fescue grasses will eventually take over and provide long-term cover. Typically the best planting season occurs between August 15 and October 15. Additional care is required outside these months.

Specifically, we recommend the following seed combination on a per acre basis:

200 lbs - Kentucky 31 Fescue
40 lbs - Legumes (must be properly inoculated)
400 lbs - Fertilizer (balanced)

This seeding rate is in excess of the Indiana State Highway Specifications, Section 621.05. However, we believe this higher rate is worthwhile, as a denser growth occurs earlier and provides more resistance to erosion soon after planting, and is less susceptible to the weather fluctuations.

Success of the seeding program will depend, in large part, on the weather. The topsoil should be kept moist for seven days after the seeding. If sufficient rainfall does not occur, additional watering may be required. If too much rainfall occurs, erosion may result. For these reasons we recommend that the slopes be periodically checked after the seeding, until the vegetation is established, so that corrective measures can be taken at an early stage, if required.

4.4 Health and Safety Program

A detailed health and safety program should be developed for this project as part of the construction activities. The specific scope will depend upon the contractors approach to the project. The program shall include,, but not be limited to, the following items:

a. Entrance and exist physicals for all on-site personnel including blood chemistry, pulmonary function testing, chest x-ray, urine testing, medical history review, and general physical review.

b. Training program to acquaint workmen with the operation and maintenance of the safety equipment, including appropriate EPA protection levels.

c. Prior to decontamination, tasks involving work on or inside the various tanks will have to be performed at EPA Levels B and C, while general site work, and work in unconfined space will be performed at EPA levels C and D.

d. Worksite and perimeter monitoring requirements with personnel protection upgrade limits. Particular important is are air monitoring requirements when working in confined spaces.

e. Discuss decontamination procedures, and eating and smoking restrictions. Outline safety equipment that will be near the active construction area such as emergency shower facilities, emergency eye wash station, SCBA stand-by equipment, and fire extinguishers.

f. At least EPA Level D safety procedures and equipment will be required for all work as a minimum requirement only.

4.5 Schedule of Implimentation

The estimated year of closure is currently unknown. This schedule represents the estimated required duration of this project once initiated.

Elapsed Time (Days)	Activity
1	Initiate closure activities
	Empty tanks and dispose of contents (due to its reactive nature, silica tetrachloride to be removed first)
	Appropriate decontamination of tanks
	Demolish, salvage or scrap tanks, as appropriate
	Regrade site
	Install cap and slurry wall
	Install monitoring wells
	Independent certification of closure, certification submitted
180	Survey plat submitted, notice placed in deed

5.0 POST CLOSURE PLAN

5.1 General

The intent of the post-closure plan is to monitor the closure activities and their effectiveness. It will involve checking any on-site closures, ensuring that the fence remains intact, the wells have not been vandalized, and most importantly, the ground water monitoring program.

5.2 Site Maintenance

In accordance with post-closure requirements, on-site closures alternatives have been designed for low maintenance. However, due to unforeseen circumstances, on-site closures may sometimes be damaged, sometimes through vandalism. For this reason, if on-site closure is performed on any of the materials, the post-closure operations will include field inspections by a licensed professional engineer familiar with the technical intent of the closure. These inspections will be in writing and will consist of visual observations to check for signs or erosion, leaching or damage to the wells.

Erosion or other deterioration judged to impair on-site closure performance will be repaired. This work must be supervised by an engineer or his representative familiar with the technical intent of the closure.

5.3 Ground Water Quality Assessment Plan

In preparation of this ground water assessment program, we have assumed that prior to closure, monitoring of indicator parameters in accordance with 40 CFR 265.91 and 265.92 would show statistically significant increases (or decreases in the case of pH) when evaluated under Student-t test criteria listed in 40 CFR 265 Appendix IV. In this section, proposed monitoring wells, their locations and depths, sampling, analytical and evaluation methods, reporting requirements and quality assurance is discussed. This ground water assessment plan is equally applicable both prior and subsequent to closure, but monitoring well numbers and locations will be dependent on whether off-site installation will be possible, and the extent of on-site closures.

5.3.1 Monitoring Wells

Based on existing site information, including the saturated thickness and the observed ground water flow direction, our proposed monitoring well numbers, locations, and screen depths are presented in Table 10. We have assumed that wells may be installed outside CCCI property, and that U.S. EPA wells C4 and C3 may be utilized.

This layout represents effective coverage of the saturated aquifer thickness both, up-gradient and down-gradient of the site.

5.3.2 Sampling Methods

Immediately prior to purging and sample collection, static water levels will be measured using either the wetted tape method or an electric probe. Readings will be taken to the nearest 0.01 foot.

Water samples will be taken using a bottom filling bailer constructed of either non-reactive teflon or 316 stainless steel. Decontamination of the bailer between wells will include a methanol or hexane rinse followed by triple rinsing with de-ionized water. A summary of the sampling procedure follows:

1. Remove standing water from the well.
   A. Bail four to six well volumes, if the well recharges quickly, then sample.
   B. If a well is slow in recharging, bail the well dry and allow the well to fill before sampling.
   C. If a bottom sample of intermediary sample is desired, it may be obtained by raising and lowering the bailer a number of times within a relatively short interval at the desired depth to be sampled. This forces the water to be sampled through the foot valve and into the bailer.

Samples taken for dissolved metals analysis will be field filtered and cooled to approximately 4 degrees Celsius, then shipped immediately to the analytical laboratory. Filtering these samples will be performed prior to chemical sample preservation.

According to analytical ground water analysis by the U.S.EPA, the only significant organic hazardous waste or hazardous waste constituents in the ground water are volatile organic compounds. Similarly, the only significant metal hazardous waste or hazardous waste constituents in the ground water include antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium , and silver. U.S.EPA water quality results are presented in Tables 2 and 3.

Consistent with the above information, with required first year background testing, and with a waiver of sampling frequency requirements after the first year, the monitoring wells shall be sampled and analyzed as outlined below:

<u>Year 1</u>

Quarter	1	2	3	4
Primary Drinking Water Standards	X	X	X	X
Ground Water Quality Parameters	X	X	X	X
Contamination Indicators (Quadruplicate for up-gradient wells only)	X	X	X	X
VOA	X	X	X	X
Antimony, Nickel	X	X	X	X

Year 2 through 30

Quarter	1	2	3	4
Ground Water Quality Parameters		X		
Contamination indicators		X		X
VOA		X		
Selected Metals		X		

To the end of the 30 year post-closure period, these parameters will be monitored. We anticipate that these parameters will be subject to reduction through additional waivers as specific data becomes available. Analytical procedures must be performed in accordance with U.S.EPA methods. Specific analytical methods and quality assurance measures will be required from the analytical laboratory (yet to be selected), and submitted under separate cover.

5.3.3 Evaluation Methods

If, significant concentrations of contaminants are encountered, the results will be contoured on a site map. In this way the rate, concentration, and extent of hazardous waste or hazardous waste constituents in the ground water may be determined.

Within 15 days after each quarterly determination, a written report containing the assessment of the ground water quality will be submitted to the Regional Administrator. If the assessment determines that hazardous waste or hazardous waste constituents have not entered the ground water, an indicator evaluation program, required under 40 CFR 265.93 (d) (b) will be instated.

6.0 Cost Estimates

6.1 Closure Plan Cost Estimate

Cost estimates for the closure and post-closure plans are attached. These costs are based on those presented in the 1986 U.S.EPA Emergency Action Plan, and by unit costs supplied be several contractors in the area. Please note that we received significant scatter in costs and these estimates should be used with caution. At this time no actual bids have been received for any of the outlined work. Cost estimates for tank decontamination and analytical testing have not been provided since the fate of the individual tanks is as yet undetermined, and varying levels of clean up will have different costs. Estimates based on work by others have been independently verified.

Summary of Closure and Post-Closure Costs

Disposal of waste in tanks (high side)	1,477,810.00
Clay cap and slurry wall contaminant	552,500.00
Contingency, 10%	205,000.00
Construction management costs, 10%, includes QA/QC, bid documents, and certification	205,000.00
Total Estimated Closure Costs	$2,440,310.00
Total Estimated Post Closure Costs	$257,600.00

Neutral Acid Sludge

Tank 20

Off-Site Landfilling (2)

Personnel	13,000.00
Equipment	4,000.00
Transportation	13,000.00
Disposal	162,000.00
Subtotal	$192,000.00

On-Site Stabilization

Personnel	13,000.00
Bench Testing, Pilot Study	5,000.00
Equipment	4,000.00
Materials	
Type C Flyash	
Est 200/3yd x $35.00/yd3	7,000.00
Subtotal	$29,000.00

PCB'S, Oil and Water

Tanks 19 and 22

On-Site Sodium Treatment

Mobilization	included in unit costs
Treatment (80% assumed treatable)	
$.20/lb.	$650,000.00
Disposal (20% incinerated)	
$.50/lb.	$410,000.00
Transportation (Chicago)	
Untreatable portion	$10,000.00
Credit for recovered oil	
2000,000 gallons x $.30 gal	-$60,000.00
Subtotal	$1,010,000.00

Cyanide Solution

On-Site Treatment (2)

Personnel	22,000.00
Equipment	35,000.00
Material	10,000.00
Disposal	360.00
Off-site Disposal	
(untreatable material)	350.00/gal
Subtotal	$67,710.00

Chlorinated Solvents

Off-Site Fuel Blending and Disposal (2)

Personnel	10,000.00
Equipment	10,000.00
Material	100.00
Disposal $.50/gal	21,150.00
Transportation	10,500.00
Subtotal	$51,750.00

Off-Site Incineration

Personnel	10,000.00
Equipment	10,000.00
Material	100.00
Disposal $.50/lb.	147,000.00
Transportation	10,500.00
Subtotal	$177,600.00

Silica Tetrachloride

Tank 43

Off-Site Incineration

Personnel	1,000.00
Equipment	500.00
Disposal $.75/lb.	15,000.00
Transportation	1,000.00
Decontamination	1,000.00
Subtotal	$18,500.00

Pickle Liquor, Process Products

Off-Site Disposal

Personnel	500.00
Equipment	500.00
Disposal $.75/gal	9,000.00
Transportation	1,000.00
Decontamination	1,000.00
Subtotal	$12,000.00

Total estimated cost (high side)..........$1,477,810.00

Total estimated cost (low side)..........$1,176,960.00

Earthen Basins, Site Soils

Cap & Slurry Wall	
Mobilization	5,000.00
Regrade site	
15,000 yd^3 x $1.50/$yd^3$	22,500.00
Clay cap (2' compacted)	
24,000 yd^3 x $7.00 yd^3	168,000.00
Drainage layer (6 inches sand)	
6,000 yd^3 x $7.00 yd^3	42,000.00
Topsoil (6 inches)	
6,000 yd^3 x $10.00 yd^3	60,000.00
Slurry Wall	
104,000 ft^2 x $2.50 ft^2	260,000.00
Subtotal	$552,500.00

6.2 Post Closure Plan

Ground Water Monitoring Costs

1st year, quarterly testing for
Drinking Water Standards,
Ground Water Quality Parameters,
Contamination Indicators,
VOA, Sb, Ni

8 wells x $1,000/each x 4	32,000.00

2 - 30 years annual Groundwater
Quality Parameters, VOA, selected
Metals, semi annual Contamination
Indicators

8 wells x $600/each x 28	134,000.00
8 wells x $150/each x 56	67,200.00
Subtotal	$233,200.00

Inspection

(Visual observation and written
report by Atec)

1st year (quarterly) 4 x $100.00	4,000.00
2 - 30 years (annually) 29 x $100.00	2,900.00
Subtotal	$6,900.00

Backhoe Repair of Erosional Features

(Assumed performed on years
1,3,7,15,25)

5 x $1,500.00/each	7,500.00
Well Maintenance	10,000.00
	$17,500.00

Total Estimated Post-Closure Costs	$257,600.00

REFERENCES

REFERENCES

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5. Indiana Department of Natural Resources Geologic Survey, 1975 Environmental Geology of Lake and Porter Counties, Indiana- An Aid to Planning

6. Roy F. Weston, Inc., 1985, Emergency Action Plan for Conservation Chemical Company Gary, Indiana

7. Simes, William, U.S.EPA, 1986, Telephone Conversation

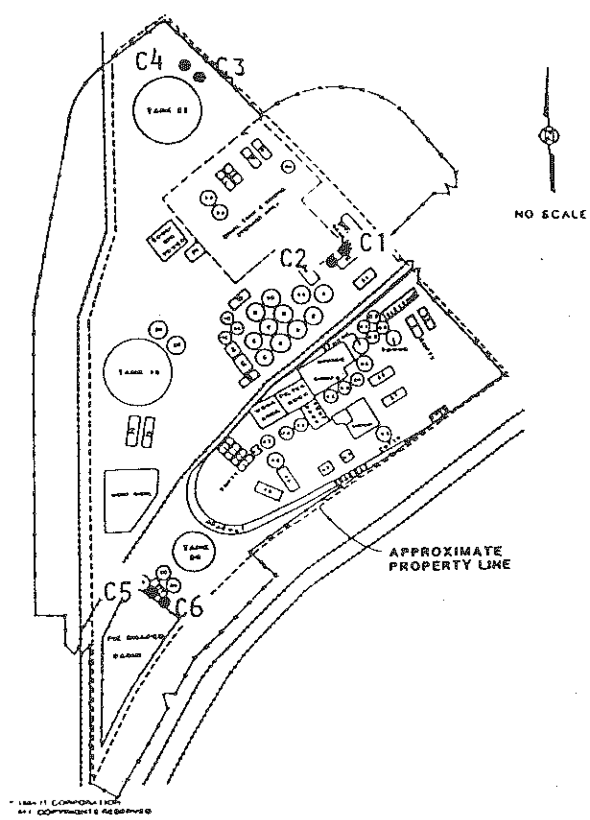
TABLES

TABLES

TABLE 1
Monitoring Well Data
Conservation Chemical Company of Illinois
Gary, Indiana

MONITORING WELL NUMBER	GROUND SURFACE ELEV. (FT)	TOP OF CASING (FT)	DEPTH TO WATER TABLE (FT)	ELEVATION OF WATER TABLE (FT)
C1	97.49	100.31	7.06	90.43
C2	97.56	100.00	6.54	91.02
C3	98.05	101.60	6.78	91.27
C4	97.84	99.58	6.57	91.27
C5	97.56	100.50	7.66	89.90
C6	97.39	99.76	7.45	89.94

NOTE:
All data from EPA report, TDD R05-8404-05. Wells installed by Canonie.



SITE PLAN

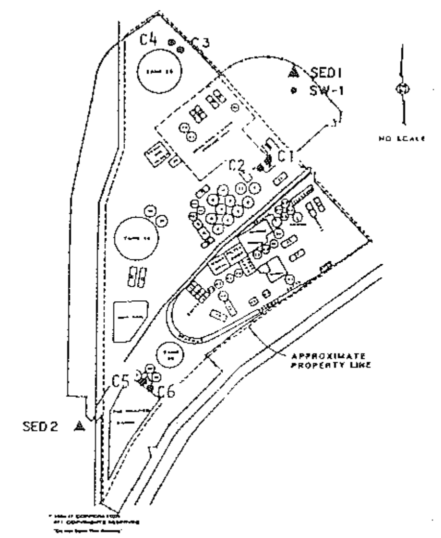
ATEC

TABLE 2
Water Quality Data
Metals, Pesticides, Etc.

Conservation Chemical Company of Illinois
Gary, Indiana

	MONITORING WELLS							SURFACE WATER	SEDIMENT SAMPLES		
	C1	C2	C2 Dup	C3	C4	C5	C6	SW-1	SED1	SED2	Blank
INORGANIC ANALYSIS											
aluminum	66.200	72.600	65.400	2.600	13.200	26.400	24.900	.730	3.500	.310	ND
antimony	1.730	.022	.034	ND	ND	.047	.130	ND	.007	ND	ND
arsenic	1.490	.220	.250	.040	.066	.140	.340	ND	.042	.031	ND
barium	.360	.920	.970	.140	.120	.660	ND	.250	.048	ND	ND
beryllium	.020	.006	.005	ND	.005	ND	.007	ND	.0003	ND	.005
boron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cadmium	.140	.001	.066	.019	.011	.0054	.110	.0073	.013	.0001	ND
chromium	.540	3.450	3.640	.027	1.310	3.280	46.600	.095	.600	.0062	ND
cobalt	3.930	.200	.160	.380	.090	1.390	6.520	ND	.022	ND	ND
copper	4.550	2.910	2.810	1.160	7.020	.340	1.320	.099	.640	.049	ND
cyanide	ND	ND	.0005	ND	ND	ND	.00002	ND	.00792	ND	ND
iron	168.000	85.500	73.400	8.220	42.200	269.000	956.000	4.480	96.700	10.600	ND
lead	.230	8.640	7.050	.159	.306	.309	14.700	.280	1.240	.470	ND
manganese	7.460	5.150	6.750	1.120	1.860	5.630	91.500	.085	.860	.047	ND
mercury	ND	.0004	ND	ND	ND	ND	ND	ND	.00066	ND	ND
nickel	8.580	.510	.500	.330	.210	4.380	21.900	ND	.190	.037	ND
selenium	.410	.005	.012	ND	ND	.005	.024	ND	.0007	.0004	ND
silver	.045	.014	ND	ND	ND	.016	.035	ND	.0014	ND	ND
thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tin	1.410 C	.069 C	.040 C	NDB	NDB	NDB	.200 C	NDB	.015 C	NDB	NDB
vanadium	.490	.580	ND	ND	ND	ND	ND	ND	.031	.013	ND
zinc	36.200 C	6.120 C	5.460 C	10.940	3.050 C	116.200 C	27.050 C	.097 C	.540 C	.024 C	NDB
ACID COMPOUNDS											
2,4-dimethylphenol	--	--	--	--	--	.010 K	--	--	--	--	--
phenol	--	.010 K	--	--	--	.010 K	--	--	--	--	--
NON-PRIORITY POLLUTANT HAZARDOUS SUBSTANCES											
2-methylphenol	--	.016	--	--	--	--	--	--	--	--	--
4-methylphenol	--	.104	--	--	--	--	--	--	--	--	--
BASE NEUTRAL COMPOUNDS											
bis(2-chloroethyl)ether	--	.045	--	--	--	.010 K	.010 K	--	--	--	--
diethylphthalate	--	--	--	--	--	.010 K	--	--	--	--	--
isophorone	--	--	--	--	--	1.422	.346	--	--	--	--
naphthalene	--	.010 K	--	--	--	--	.010 K	--	10 K	10 K	--
n-nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	10 K	10 K	--
NON-PRIORITY POLLUTANT HAZARDOUS SUBSTANCES											
benzyl alcohol	--	--	--	--	--	--	.020 K	--	--	--	--
2-methylnaphthalene	--	.020 K	--	--	--	--	.020 K	--	20 K	20 K	--
PESTICIDES											
4,4-DDD		.0119	.0159	--	--	--	--	.0214	--	--	--

NOTES: 1) All units in ppm.
KEY: B = Amount in blank greater than 1/2 the amount detected.
C = Corrected value.
K = Compound is present, but below the listed detection limit.
NA = Not applicable.
ND = Not detected.
NDB = Not detected due to blank contamination.



SITE PLAN

ATEC

TABLE 3
Water Quality Data
Organics

Conservation Chemical Company of Illinois
Gary, Indiana

	MONITORING WELLS C1	C2	C2 Dup	C3	C4	C5	C6	SURFACE WATER SW-1	SEDIMENT SAMPLES SED1	SED2	Blank
ORGANICS-TENTATIVELY IDENTIFIED COMPOUNDS											
benzene, 1,3-dimethyl	--	--	--	--	--	--	.260	--	--	--	--
benzene, 1,4-dimethyl	--	.096	--	--	--	--	--	--	--	--	--
benzene, propyl	--	--	--	--	--	--	.042	--	--	--	--
cyclohexane methyl	--	--	--	--	--	--	.200	--	26,000	--	--
cyclohexane 1,1,3-trimethyl	--	--	--	--	--	--	--	--	47,000	--	--
cyclopentane, methyl	--	--	--	--	--	--	.110	--	--	--	--
dimetoxy-methane	--	--	--	.053	--	--	--	--	--	--	--
1,4-dioxane	.070	--	.400	.016	--	--	--	--	--	--	--
furan, tetrahydro	.150	1.200	--	.072	--	--	--	--	--	--	25
3-heptanol, 3-methyl	--	--	--	--	--	--	.054	--	--	--	--
hexane, 3-methyl	--	--	--	--	--	--	--	--	15,000	--	--
1-(2-methoxyethoxyl-butane)	--	--	--	--	--	--	--	--	--	--	--
molecular sulfur	--	--	--	--	--	--	--	--	--	--	--
oxybis-methane	--	--	--	.330	--	--	--	--	--	--	--
1,1-oxybis/2-methoxy-ethane	--	--	--	--	--	.360	.670	--	--	--	--
pentane, 2,3-dimethyl	--	--	--	--	--	--	--	--	8,400	--	--
1,1,2-trichloro-1,2,2-trifluoro-ethane	--	--	--	.012	--	--	.068	--	--	--	--
3,5,5-trimethyl-2-cyclohexane	--	--	--	--	--	--	.200	--	--	--	--
1,2,4-trithiolane	--	--	--	--	--	--	.120	--	--	--	--
ORGANICS-VOLATILE FRACTION											
acetone	.930	.120	.400	.130	--	6.800	30.000	--	B	15,000 C	[illegible]
benzene	.025 K	.430	.600	--	--	--	.950	--	[illegible] K	1,463 K	--
bromoform	--	--	--	--	--	--	--	--	[illegible]	2,925 K	--
2-butanone	.140	--	.110	--	--	2.400	4.400	--	B	B	--
carbon disulfide	--	--	--	--	--	--	.013	--	--	--	--
chlorobenzene	--	--	--	--	--	--	--	--	--	5,100	--
chloroethane	--	--	.057	--	--	--	--	--	--	--	--
chloroform	--	--	--	--	--	--	.210	--	[illegible]	2,100	--
1,1-dichloroethane	--	.310	.440	--	.008	1.800	.250	--	--	--	--
1,2-dichloroethane	.066	.019	.023	--	--	.880	.280	--	2,100	6,700	--
1,1-dichloroethene	--	--	.025 K	--	--	--	.050	--	--	--	--
ethylbenzene	--	--	--	--	--	--	.250	--	1,200 C	10,000 C	--
2-hexane	--	--	--	--	--	--	.054	--	--	--	--
4-methyl-2-pentanone	.037	--	.043	--	--	4.800	2.200	--	--	--	--
methylene chloride	4.800	.075 C	.020 C	.012 C	B	4.800	3.600	.005 K	B	7,700 C	5 K
tetrachloroethene	--	--	--	.005 K	--	--	--	--	450	3,300	5 K
toluene	--	--	.025 K	--	--	.950	.350	--	175 K	1,800 C	5 K
total xylenes	--	.050	.170	.006	--	.500 K	.420	--	B	5,400 C	--
trans-1,2-dichloroethene	--	.034	.037	--	--	--	.045	--	--	--	--
1,1,1-trichloroethane	--	.130	.190	--	--	6.700	1.900	--	--	--	5 K
1,1,2-trichloroethane	--	--	--	--	--	2.200	.500	--	620	2,600	--
trichloroethene	--	.140	.190	--	--	13.000	2.100	--	[illegible] K	--	B

NOTES: 1) All units in ppm.
KEY: B = Amount in blank greater than 1/2 the amount detected.
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K = Compound is present, but below the listed detection limit
NA = Not applicable
ND = Not detected.
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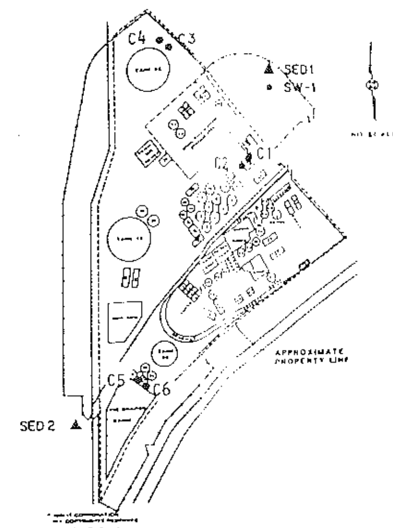


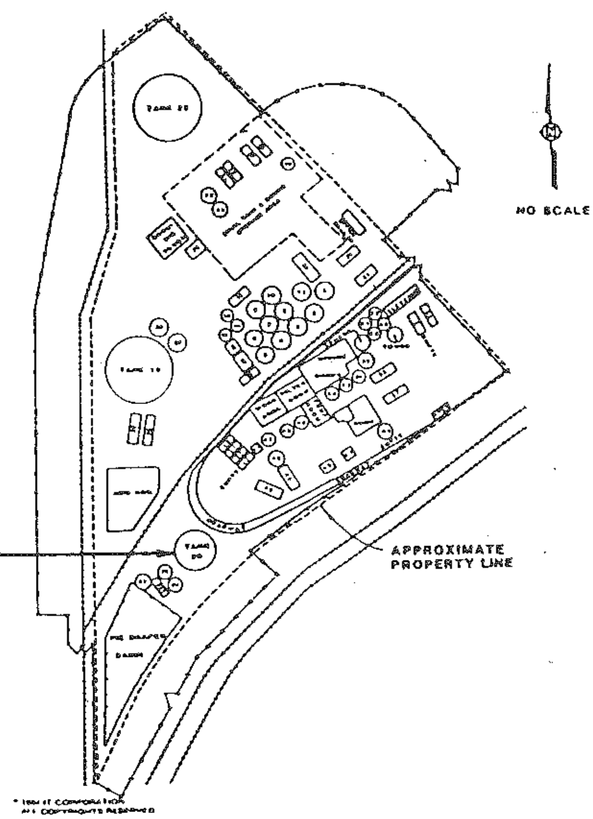
SITE PLAN

ATEC

TABLE 4
Tank 20 Data

Conservation Chemical Company of Illinois
Gary, Indiana

TANK 20 DATA	REFERENCE
LOCATION: Tank 20	Part B Application, Sec. D
CAPACITY: 550,000 gallons	Part B Application, Sec. D
CONTENTS: 305,000 gallons neutralized acid sludge	Part B Application, Sec. D
CAPACITY: 420,000 gallons CONTENTS: 242,760 gallons neutralized acid sludge as of 2/4/85.	Weston Report to EPA, May, 1985



SITE PLAN

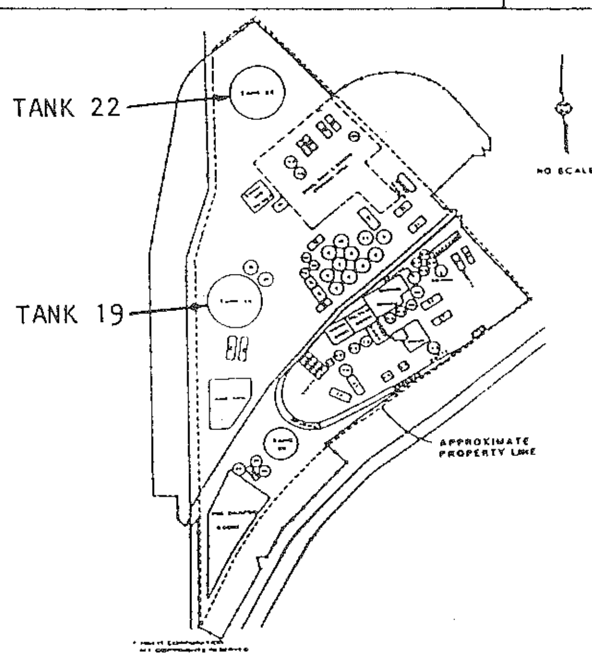
ATEC

TABLE 5
Tanks 19 & 22 Datum

Conservation Chemical Company of Illinois
Gary, Indiana

TANK 19 DATA	REFERENCE
LOCATION: Tank 19 CAPACITY: 842,000 gallons CONTENTS: 166,000 gallons water, 25,000 gallons #5 fuel oil, contaminated with PCB's.	Part B Application, Sec. D Part B Application, Sec. D Part B Application, Sec. D
PCB: Aroclor 1254 108. ppm	General Testing Lab, Inc. test results - Sept. 30, 1983
OIL AND SLUDGE: 13,992 gallons as of Feb. 4, 1985. PCB concentration of 1256 ppm at highest level.	Weston Report, May 1985
Tank two-thirds full of #5 fuel oil, October 1972.	From I.S.B.H., Division of Land Pollution Files

TANK 22 DATA	REFERENCE
LOCATION: Tank 22 CAPACITY: 1,855,000 gallons CONTENTS: 470,850 gallons of #5 fuel oil and asphalt mixture, contaminated with PCB's.	Part B Application, Sec. D Part B Application, Sec. D Part B Application, Sec. D
PCB: Aroclor 1254 <1.0 ppm Aroclor 1260 30 to 47 ppm	General Testing Lab, Inc. test results, 9/4/81
PCB: Aroclor 1254 45 to 76 ppm	General Testing Lab, Inc. test results, 10/20/83



SITE PLAN

ATEC

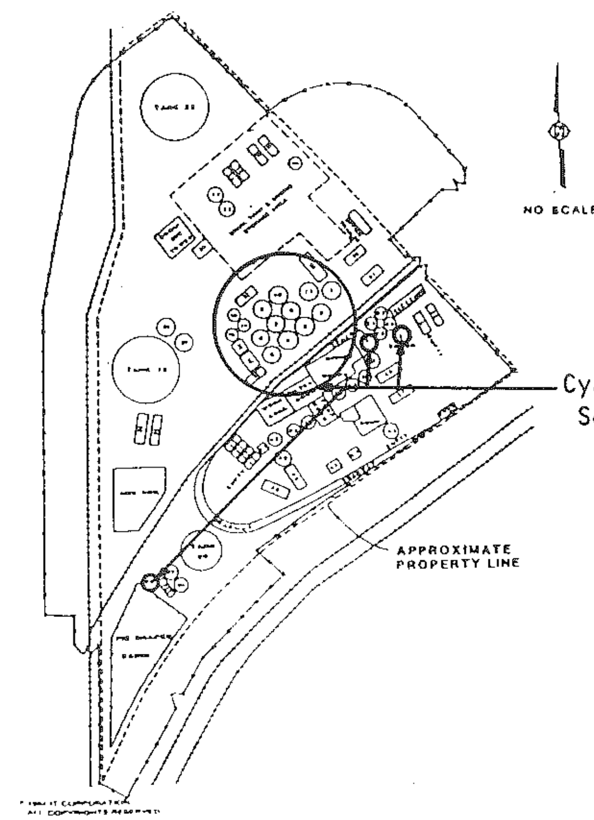
TABLE 6
Cyanide Storage Tank Data

Conservation Chemical Company of Illinois
Gary, Indiana

NEW TANK NUMBER	OLD TANK NUMBER	CAPACITY in gallons	CONTENTS	SPECIFIC GRAVITY	ZAHN/SEC VISCOSITY	CN^- PPM	SOLUBILITY IN WATER	pH
Sphere	Sphere	22,800	Spent Cyanide Solution 11'3" outage	1.095	6.7	12,400	Soluble	13.5
Tower	Tower	30,000	Spent Cyanide Solution	1.1	- -	1,438	Soluble	11.4
18	RR-2	10,000	Spent Cyanide Solution 3,790 gallons	1.125	6.5	12,650	Soluble	12.1
12	TR-38	5,500	Spent Cyanide Solution 1,300 gallons	1.09	6.6	17,062	Soluble	13.1
17	ST-1	20,000	Spent Cyanide Solution 19,500 gallons	0.88 Has oil	7.3	62	Insoluble	7.6
11	DB-1	12,000	Spent Cyanide Solution 1,500 gallons	N O S A M P L E				
1	2A	21,400	Spent Cyanide Solution 12,400 gallons	1.14	6.5	3,112	Soluble	13.6
3	4A	21,400	Spent Cyanide Solution 19,925 gallons	1.005	6.5	975	Soluble	12.8
5	6A	21,400	Spent Cyanide Solution 500 gallons	N O S A M P L E - E M P T Y				
6	8A	17,625	Spent Cyanide Solution 14,100 gallons	1.03	6.8	5,150	Soluble	12.9
21	26	14,350	Spent Cyanide Solution 11,050 gallons	1.025	6.9	5,838	Soluble	12.9
4	28	19,100	Spent Cyanide Solution 16,800 gallons		6.8	6,812		
8	23	19,100	Spent Cyanide Solution 10,830 gallons	1.075	6.7	19.925	Soluble	12.7
7	X	19,430	Spent Cyanide Solution 12,570 gallons	1.01	6.6	937.5	Soluble	12.9
10	21	21,000	Spent Cyanide Solution 6,056 gallons		6.4	9,812	Soluble	
29	CY-1	22,100	Spent Cyanide Solution 1,480 gallons	N O S A M P L E			Soluble	

REFERENCE: Part B Application, Section D and IT Corporation's Draft Sampling Plan(Table 1).

**Not locatable on IT Corp. Draft Sampling Plan(Table 1).



Cyanide Storage Tank Areas
See Fig. 4 for more details

SITE PLAN

ATEC

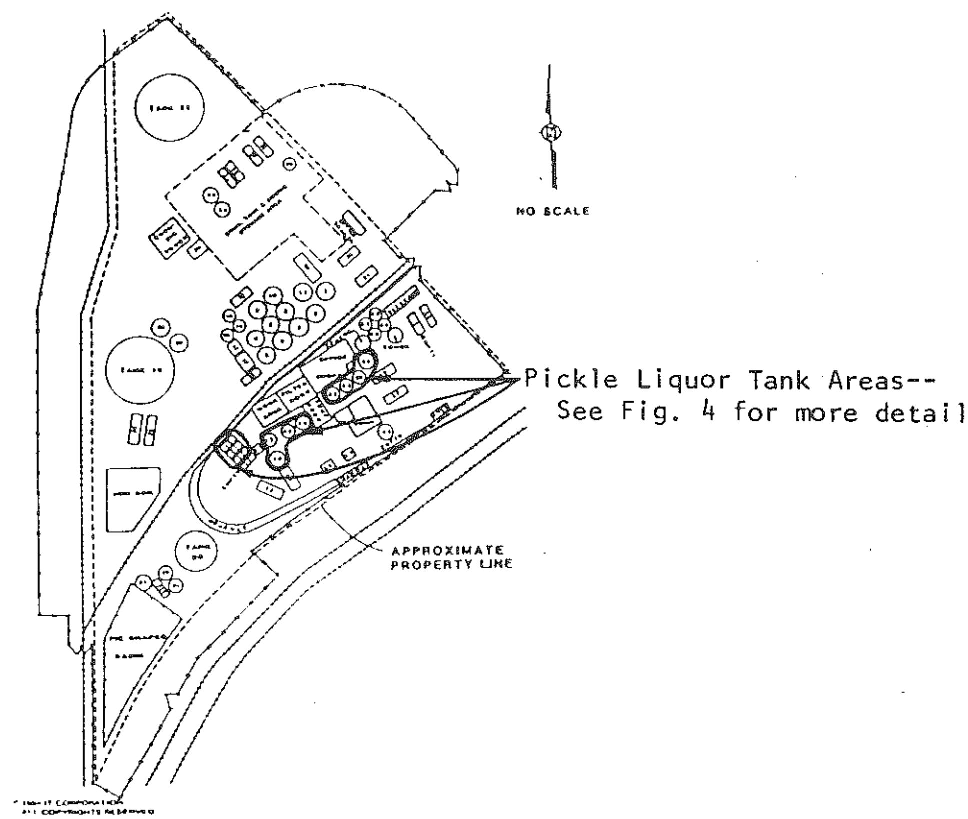
TABLE 7
Pickle Liquor Storage Tank Data

Conservation Chemical Company of Illinois
Gary, Indiana

NEW TANK NUMBER	OLD TANK NUMBER	CAPACITY in gallons	CONTENTS	SPECIFIC GRAVITY	ZAHN/SEC VISCOSITY	SOLUBILITY IN WATER	pH
	RR-1**	8,000	Pickle Liquor, $FeCl_2$ 4000 gallons	1.346	6.6	Soluble	1
52	CB2	14,200	Pickle Liquor Empty	E M P T Y			
53	CB3	14,200	Pickle Liquor Empty	E M P T Y			
54	CB4	14,200	Pickle Liquor Empty	E M P T Y			
40	R3	10,000	Pickle Liquor or Process Acid 10,000 gallons	N O S A M P L E			
42*	R33	10,000	Silica Tetrachloride 2,500 gallons	E M P T Y			
41	R30	7,000	Pickle Liquor or Process Acid 7000 gallons	1.37	6.5	Soluble	1
46*	12	12,200	Pickle Liquor, $FeCl_2$ 600 gallons	E M P T Y			
47*	F-3	14,000	Pickle Liquor, $FeCl_2$ 300 gallons	1.324	6.5	Soluble	1
	1A**	21,400	$FeCl_3$ Process Tank	1.356	6.4		1
55	3A	21,400	$FeCl_3$ Process Tank				
	14**	21,400	$FeCl_3$ Process Tank				
49	F-1	21,400	$FeCl_3$ Process Tank				
48	F-2	21,100	$FeCl_3$ Process Tank				
	Rubber-lined Sump**		Pickle Liquor, $FeCl_2$	1.37	6.4		1

REFERENCE: Part B Application, Section D and IT Corporation's Draft Sampling Plan(Table 1).

*Part B Application states tank empty. IT Corp. draft sampling plan states 2,500 gallons.
**Not locatable on IT Corporation's Draft Sampling Plan(Table 1).



SITE PLAN

ATEC

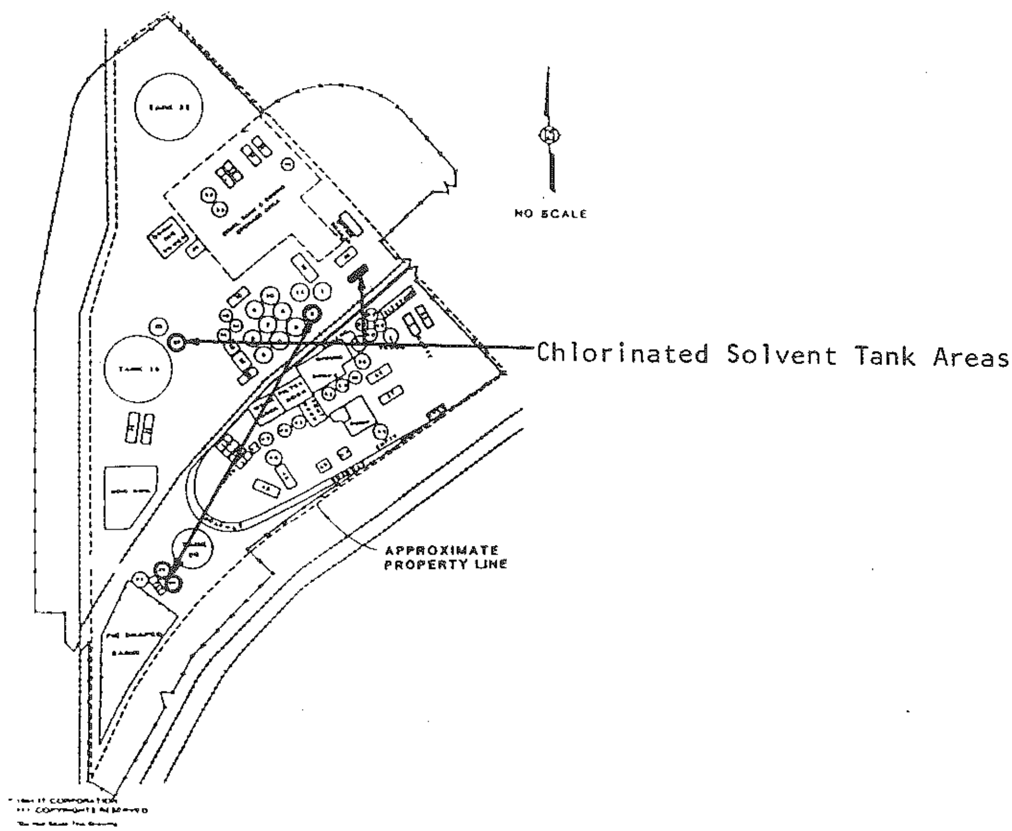
TABLE 8
Chlorinated Solvents Storage Tank Data

Conservation Chemical Company of Illinois
Gary, Indiana

NEW TANK NUMBER	OLD TANK NUMBER	CAPACITY in gallons	CONTENTS	SPECIFIC GRAVITY	ZAHN/SEC VISCOSITY	SOLUBILITY IN WATER	pH
27	F-11	6,000	Dirt from Clean Up of Solvent Spill	1.0	6.8	Insoluble	7.0
2	2	46,200	Solvent Unknown	0.92	8.3	Insoluble	7.2
31	D-1	12,000	High grade Solvent 9,000 gallons	1.238	6.4	Insoluble	5.2
23	1-S	23,400	Solvents-Methylene Chloride 18,200 gallons	1.0	7.2	Missible	5.3
24	2-S	17,200	Solvents-Methylene Chloride 15,100 gallons	0.956	6.7	Missible	8.2
	CONL**	13,366	Chlorinated Solvents	1.0	7.2	Missible	5.6
	CONTAINERS** RAW**		Chlorinated Solvents				

REFERENCE: Part B Application, Section D and IT Corporation's Draft Sampling Plan(Table 1).

**Not locatable on IT Corporation's Draft Sampling Plan



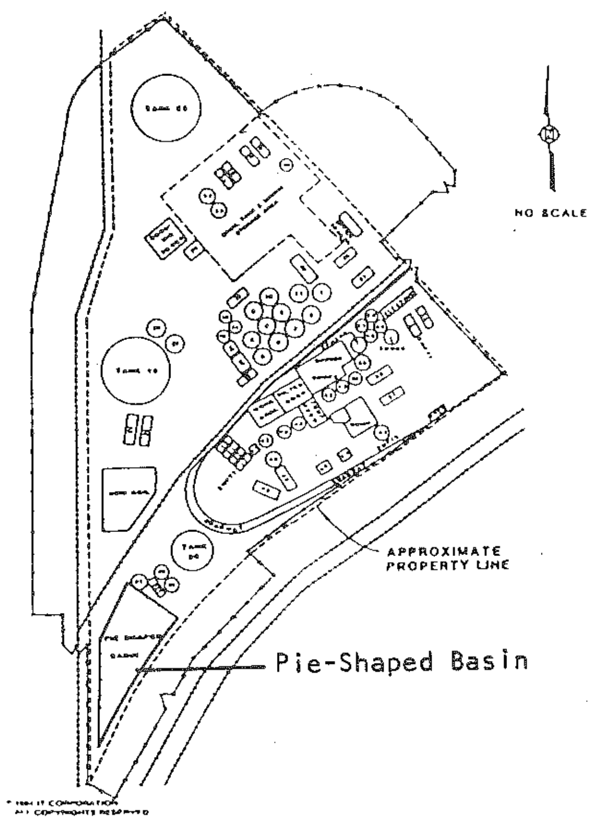
SITE PLAN

TABLE 9
Pie-Shaped Basin Contents

Conservation Chemical Company of Illinois
Gary, Indiana

		REFERENCE
LOCATION: Pie-Shaped Basin		Part B Application, Sec. C
CONTENTS: (Quantitative Analysis)*		
pH	5.2	
Arsenic	<.005	
Barium	<.05	
Cadmium	.24	
Chromium Total	.11	
Lead	.20	
Mercury	<.0002	
Chromium Hexavalent (VI)	<.01	
Selenium	<.005	
Silver	<.02	
Total Organic Carbon	8.35	

*EP Toxicity Results



SITE PLAN

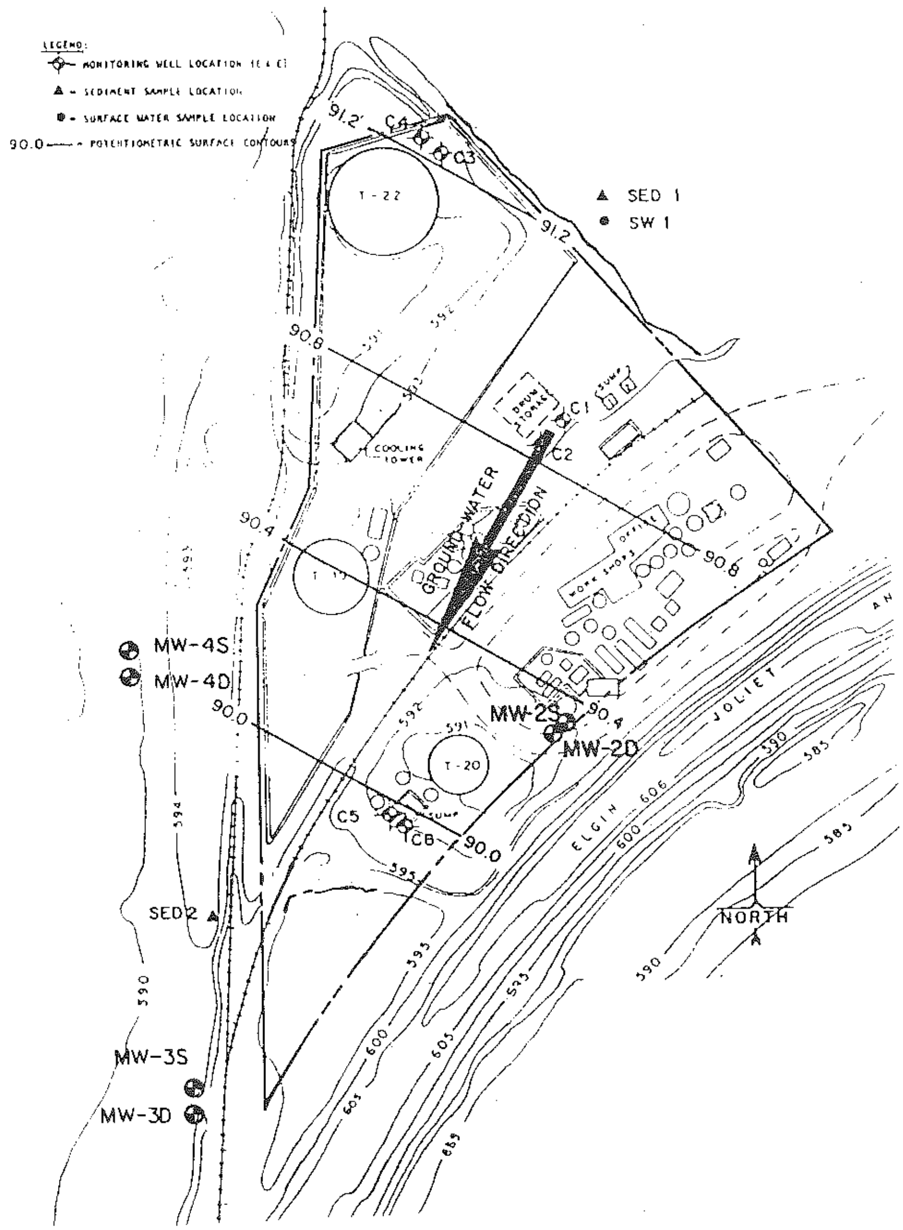
ATEC

TABLE 10

Ground Water Quality Assessment Plan
Proposed Monitoring Well Locations

Conservation Chemical Company of Illinois
Gary, Indiana

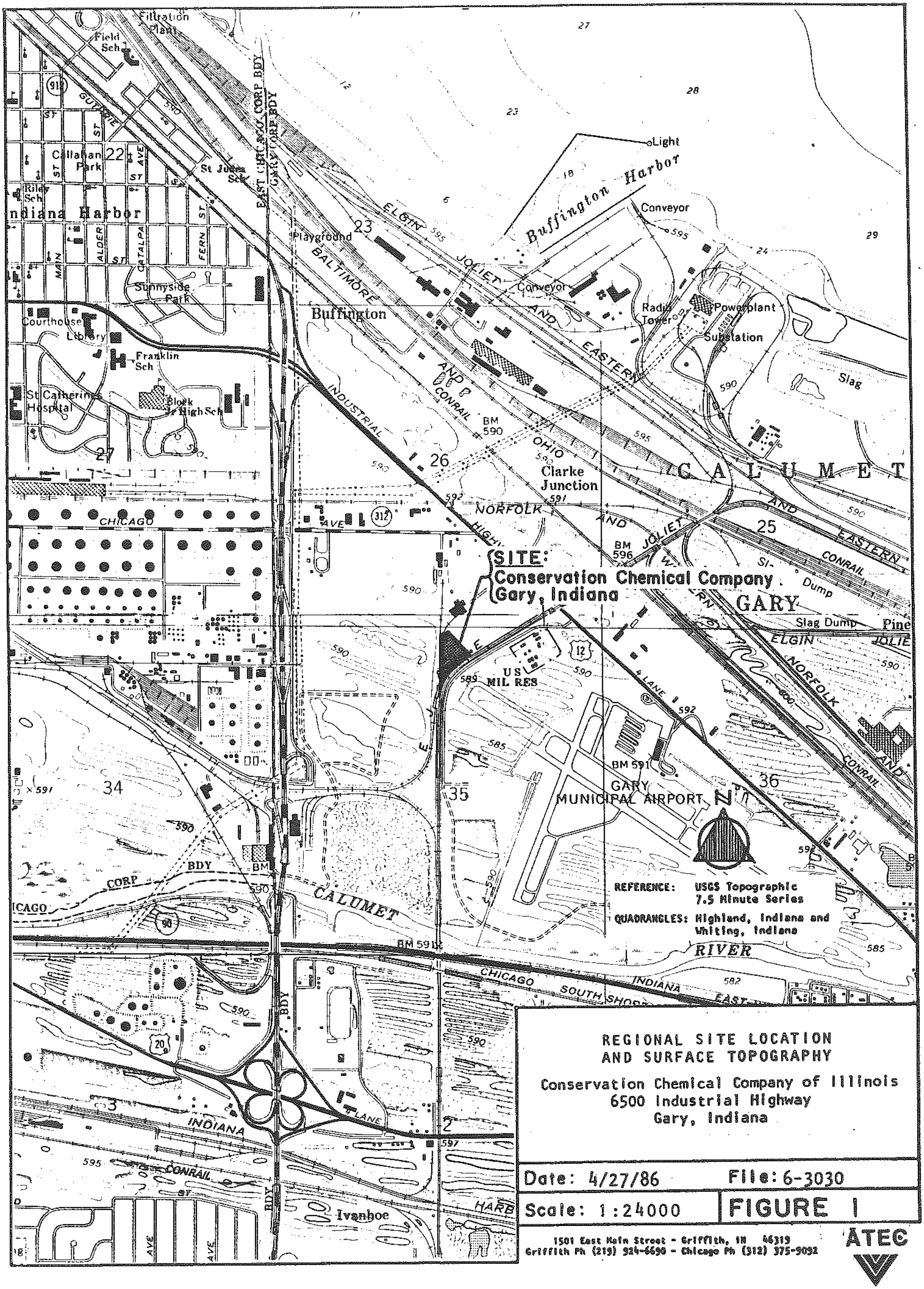
MONITORING WELL NO.	SCREEN DEPTHS (FT)
C-4	8.5-13.5
C-3	26.0-31.0
MW-2S	5.0-15.0
MW-2D	30.0-40.0
MW-3S	5.0-15.0
MW-3D	30.0-40.0
MW-4S	5.0-15.0
MW-4D	30.0-40.0



ATEC

FIGURES

FIGURES

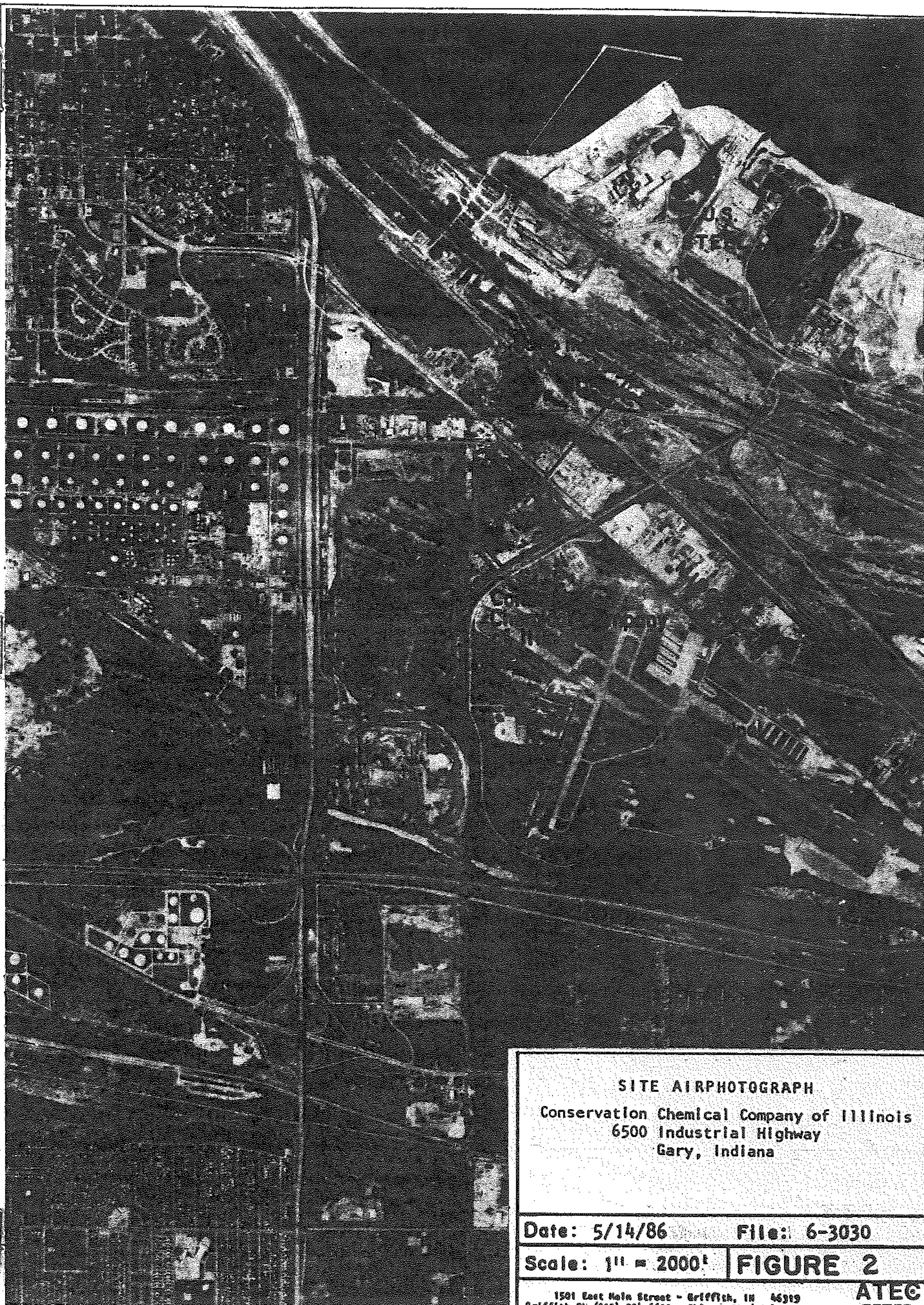


REGIONAL SITE LOCATION
AND SURFACE TOPOGRAPHY

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 4/27/86	File: 6-3030
Scale: 1:24000	FIGURE 1

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9032
ATEC



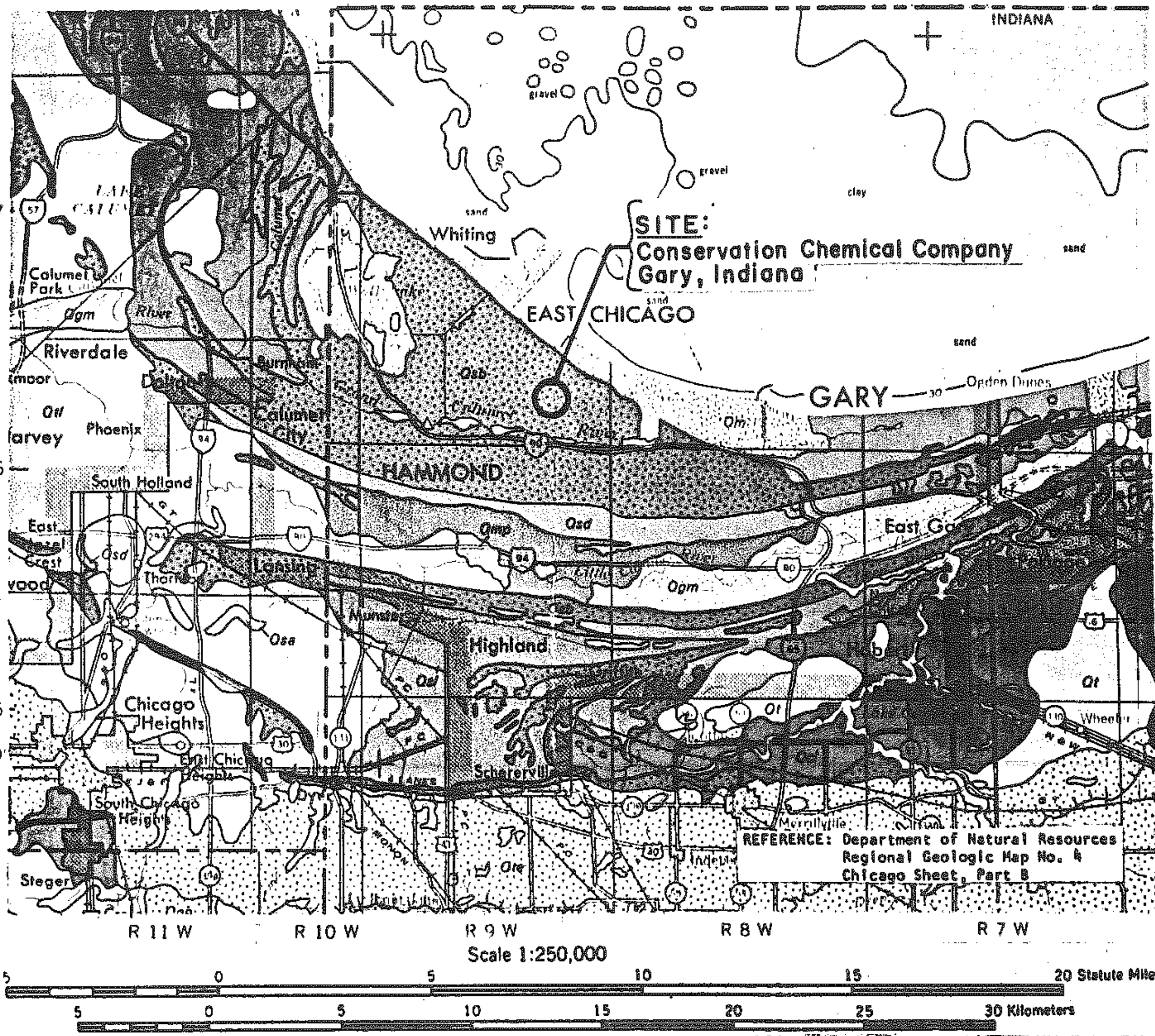
SITE AIRPHOTOGRAPH

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/14/86	File: 6-3030
Scale: 1" = 2000'	FIGURE 2

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9092

ATEC



EXPLANATION

UNCONSOLIDATED DEPOSITS

Qm — Made and modified land
Artificial fill and land substantially modified by the removal of unconsolidated deposits. Many small areas not mapped

Qmp — Muck, peat, and marl
Paludal and lacustrine deposits. Martinsville Formation in Indiana

Qgm — Muck or silt over sand and gravel
Outwash (mostly valley-train) deposits of sand and gravel overlain in places by thin (generally less than 3 to 5 feet) lacustrine, paludal, or alluvial deposits of muck, peat, clay, silt, or fine sand. Martinsville Formation over outwash facies of Atherton Formation in Indiana

Qsd — Sand and some silt
Dune deposits. Dune facies of Atherton Formation in Indiana

Qsb — Sand and gravel
Beach and shoreline deposits in bars, spits, deltas, and beaches. Includes some dune sand. Atherton Formation in Indiana

Qcl / Qsl — Clay, silt, and sand
Lacustrine deposits. Qcl, mostly clay and silt; Qsl, mostly sand. Lacustrine facies of Atherton Formation in Indiana

Qt / Qte / Qtl — Till
Includes some ice-contact stratified drift. Qt, mainly ground-moraine deposits; Qte, mainly end-moraine deposits; Qtl, wave-scoured lake-bottom till. Mostly Lagro Formation in Indiana

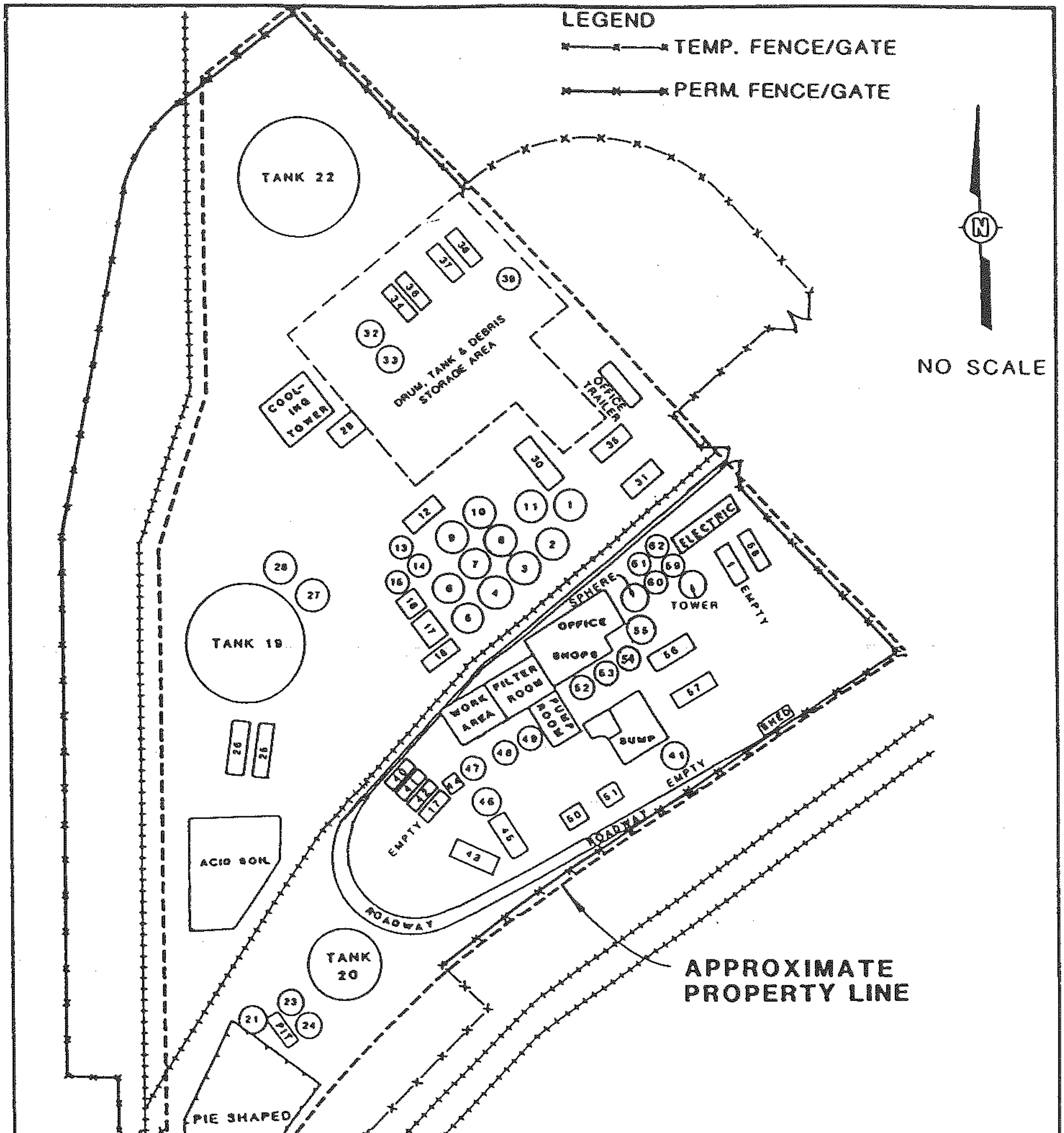
REGIONAL GEOLOGY
UNCONSOLIDATED DEPOSITS

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 3/27/86	File: 6-3030
Scale: As Shown	FIGURE 3

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-5092

ATEC



ONSITE TANK FACILITIES

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

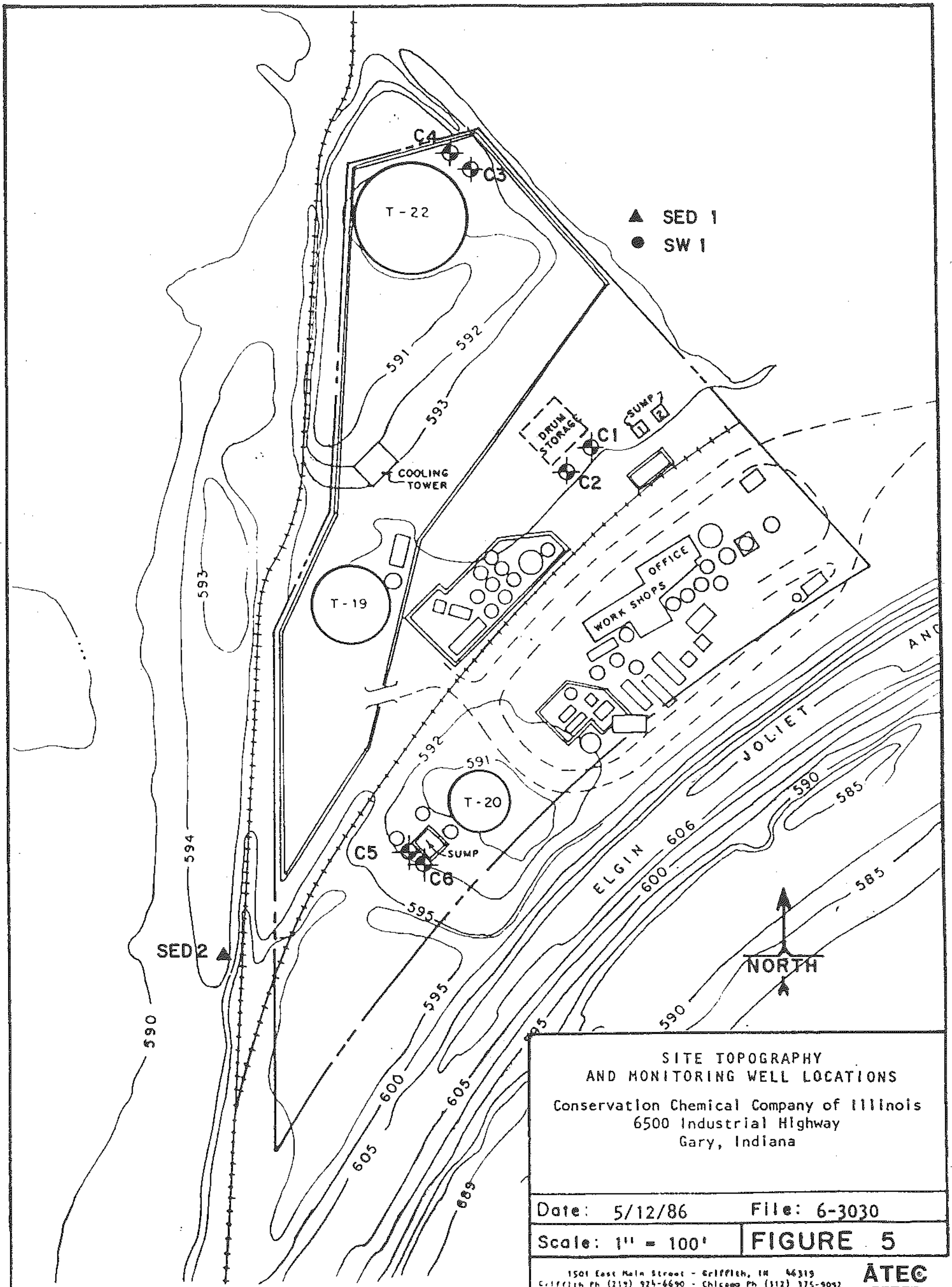
Date: 5/13/86 File: 6-3030

Scale: Not to Scale FIGURE 4

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9002

ATEC

"Do Not Scale This Drawing"



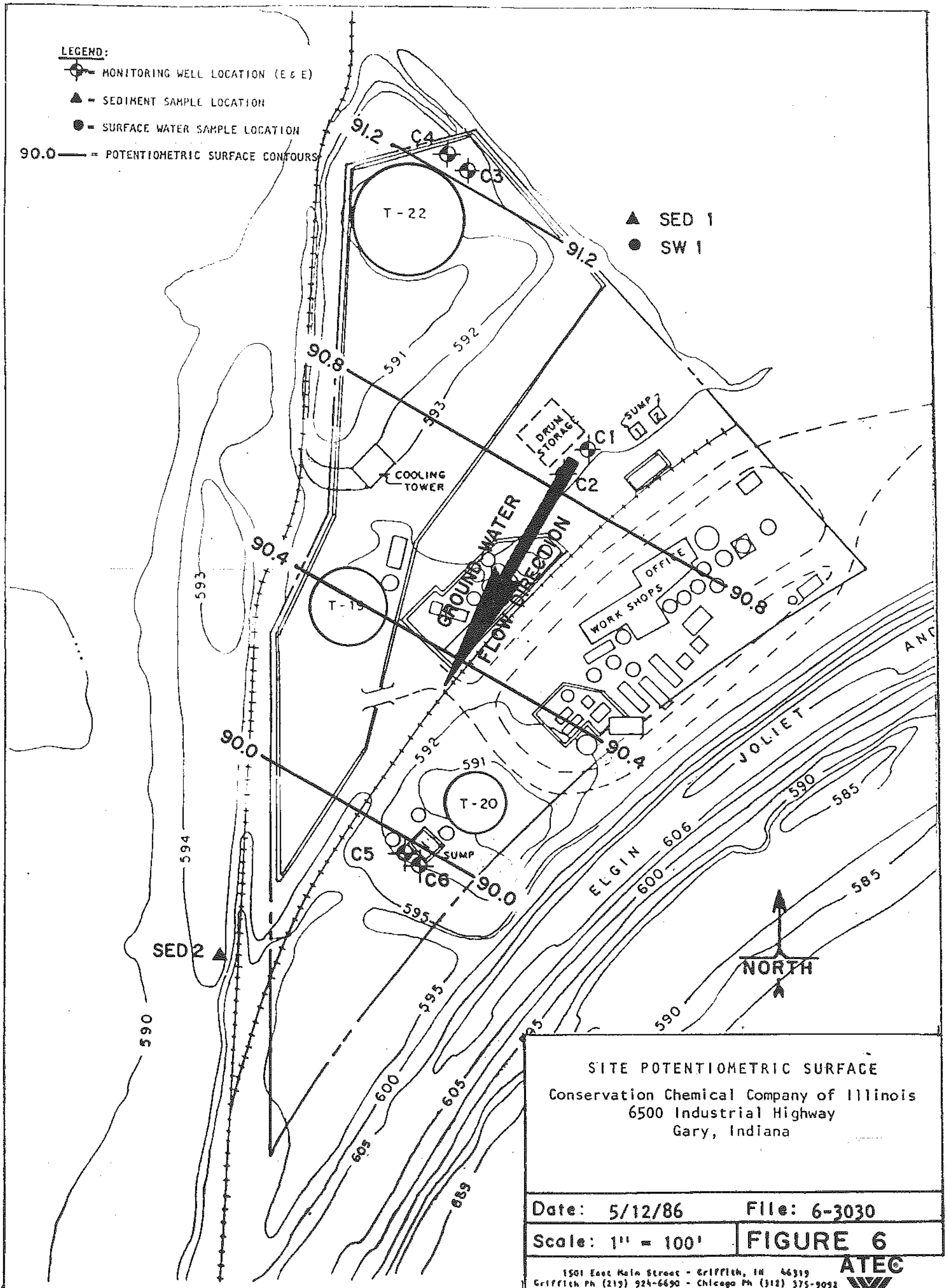
SITE TOPOGRAPHY
AND MONITORING WELL LOCATIONS

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/12/86	File: 6-3030
Scale: 1" = 100'	FIGURE 5

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9052

ATEC

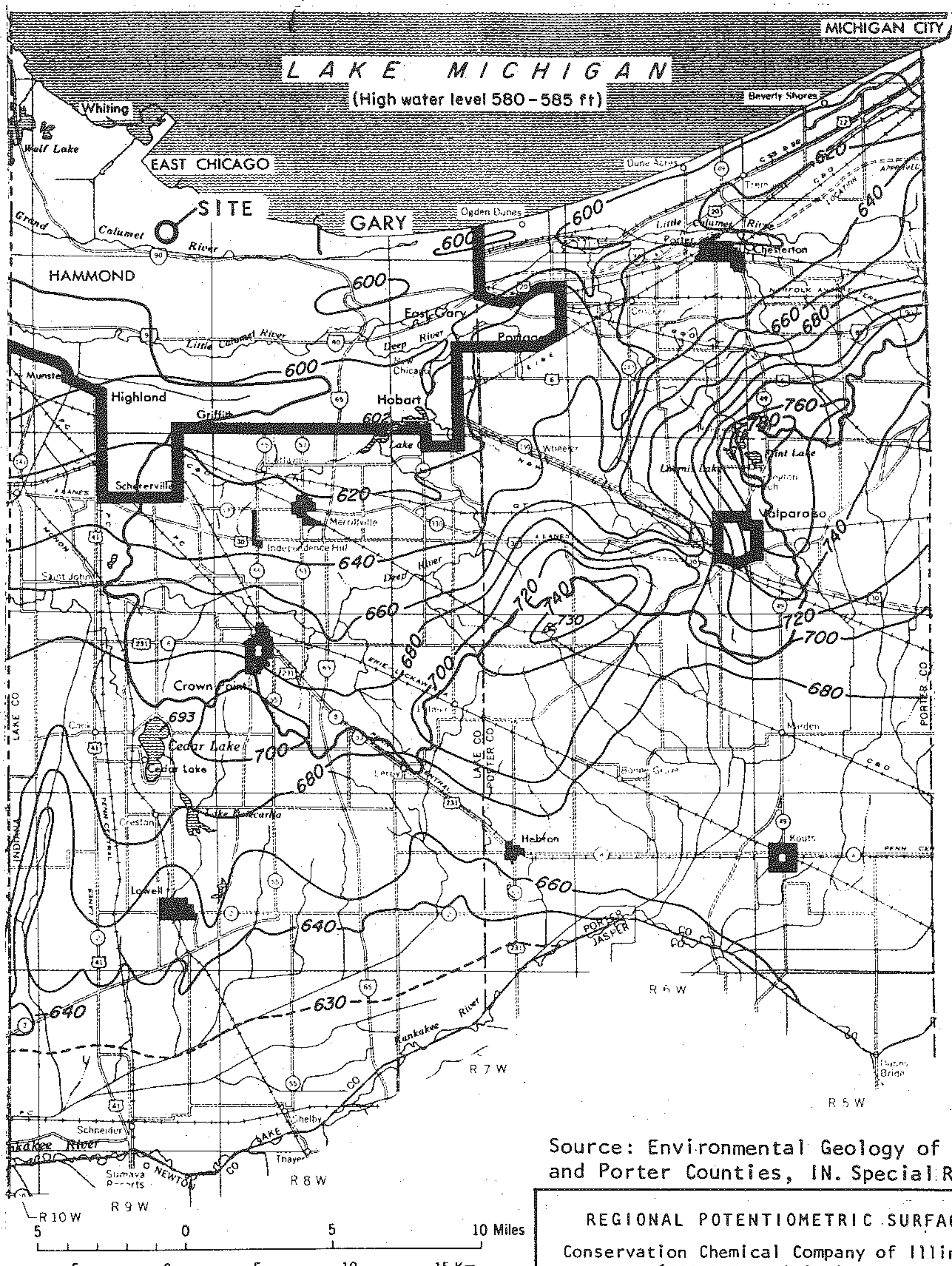


SITE POTENTIOMETRIC SURFACE

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/12/86
File: 6-3030
Scale: 1" = 100'
FIGURE 6

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9092
ATEC



Source: Environmental Geology of Lake and Porter Counties, IN. Special Rpt. 11

EXPLANATION

—660—
Approximate potentiometric surface in feet above mean sea level

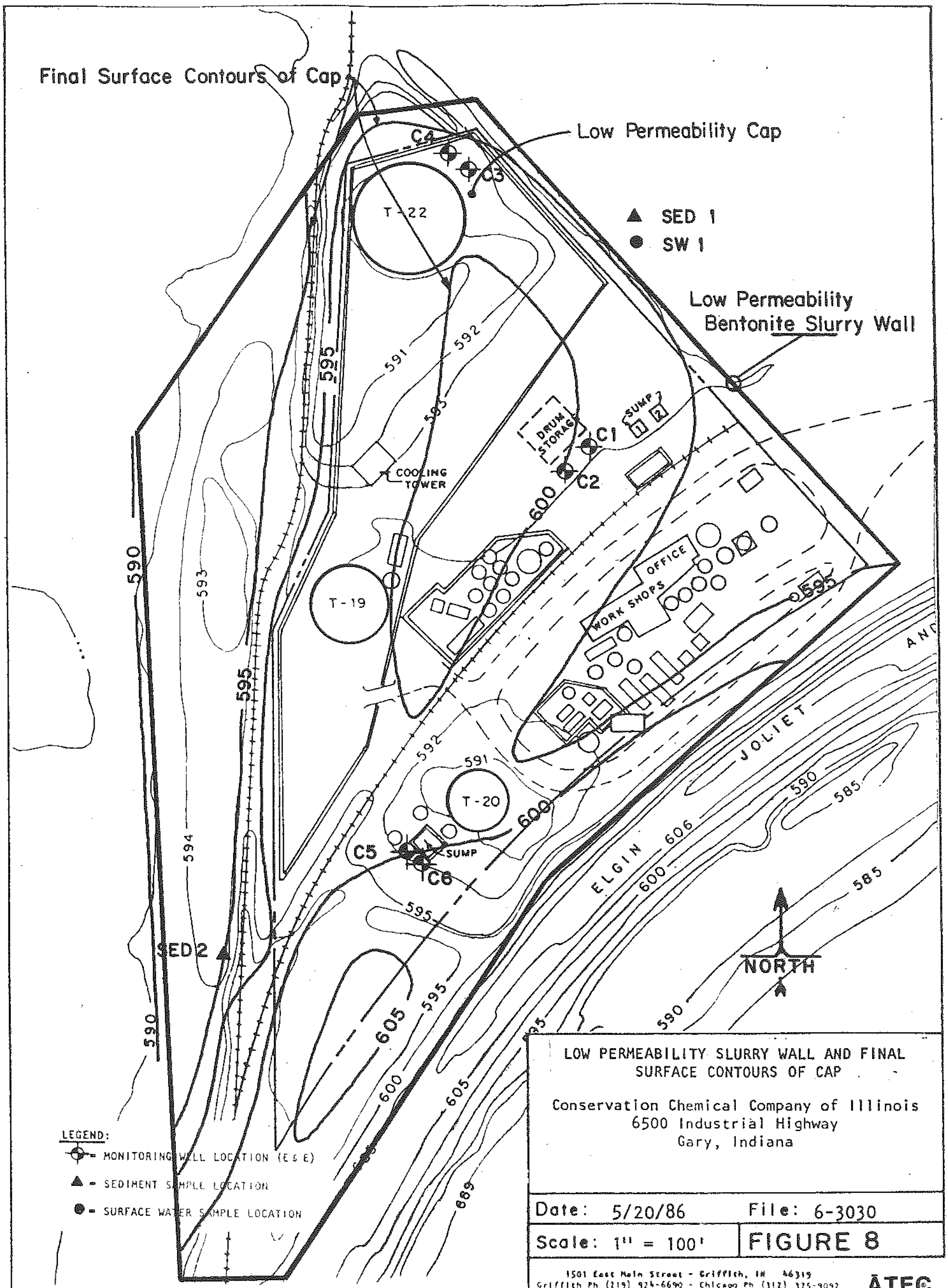
North - south continental drainage divide

REGIONAL POTENTIOMETRIC SURFACE

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/13/86	File: 6-3030
Scale: As Shown	FIGURE 7

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9092
ATEC

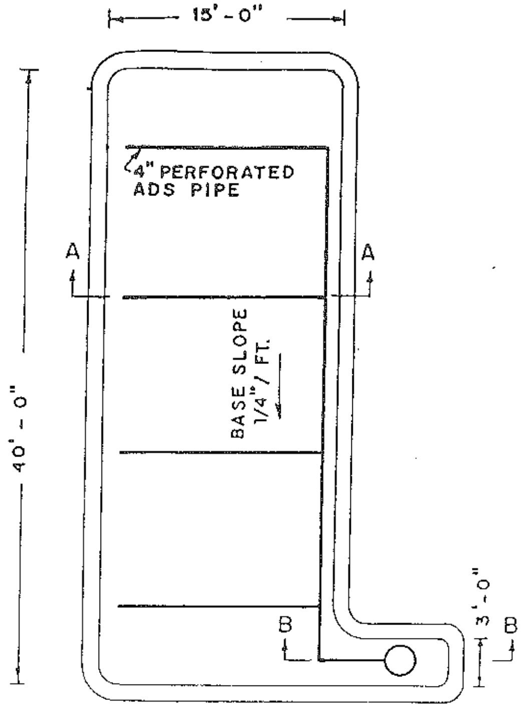


LOW PERMEABILITY SLURRY WALL AND FINAL SURFACE CONTOURS OF CAP

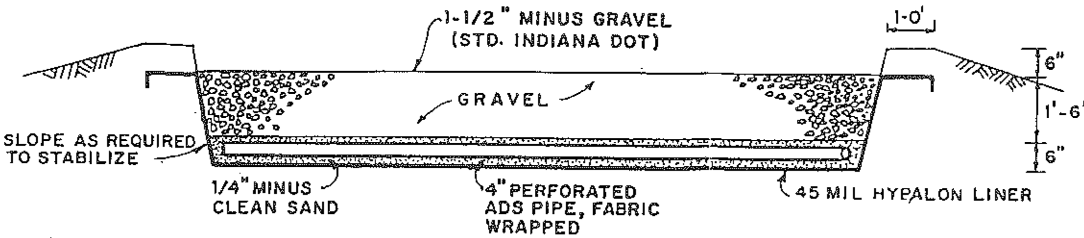
Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/20/86	File: 6-3030
Scale: 1" = 100'	FIGURE 8

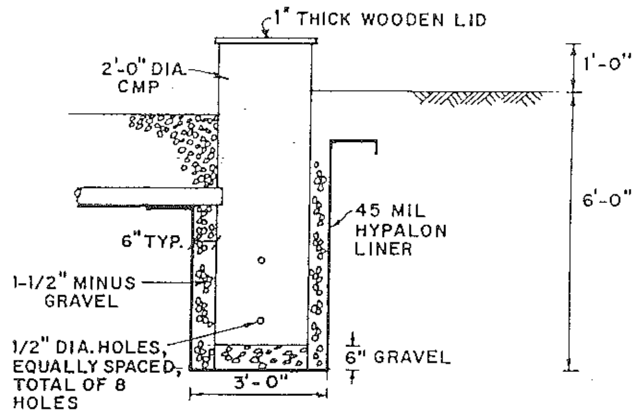
1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9092
ATEC



PLAN VIEW
Scale: 1/8" = 1'-0"



SECTION A-A
Scale: 3/8" = 1'-0"



SECTION B-B

CONSTRUCTION DETAILS
VEHICLE/EQUIPMENT WASH PAD

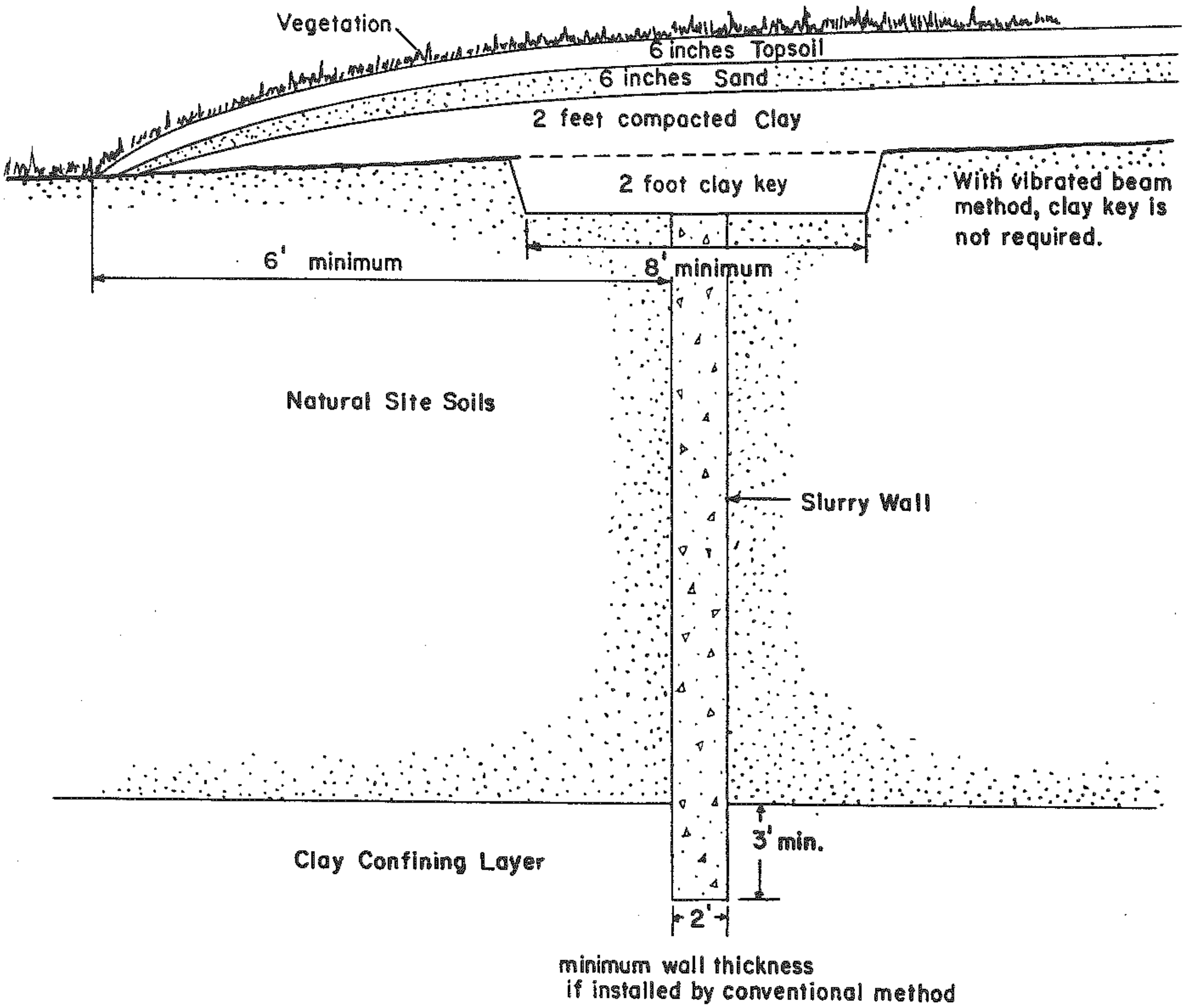
Conservation Chemical Company of Illinois
Gary, Indiana

Date 5/17/86	File 6-3030
Scale As shown	FIGURE 9

1501 East Main Street • Griffith, Indiana 46319
Griffith Phone (219) 924-6690
Chicago Phone (312) 375-9092

ATEC

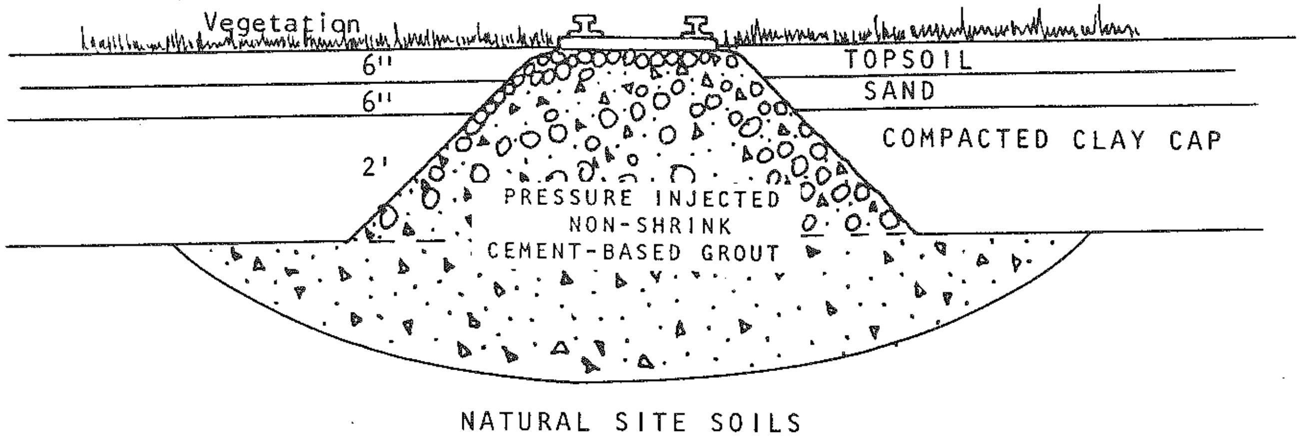
CLAY CAP AND SLURRY WALL DETAILS



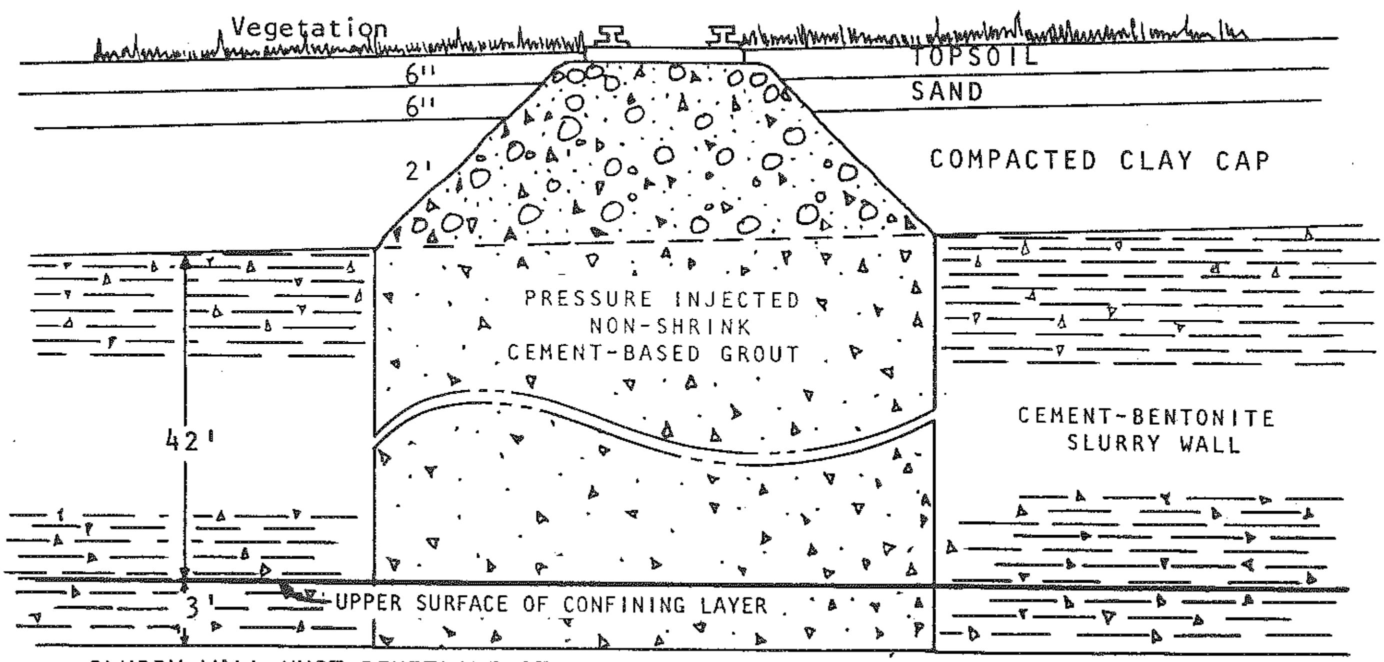
CONSTRUCTION DETAILS Conservation Chemical Company of Illinois 6500 Industrial Highway Gary, Indiana	
Date: 5/24/86	File: 6-3030
Scale: Not to Scale	FIGURE 10

1501 East Main Street • Griffith, IN 46319
Griffith Ph (219) 924-6690 • Chicago Ph (312) 375-5092
ATEC

EXTENSION OF IMPERMEABLE CAP
BENEATH RAILROAD TRACKS



EXTENSION OF SLURRY WALL BENEATH RAILROAD TRACKS



SLURRY WALL MUST PENETRATE AT
LEAST 3' INTO CONFINING CLAY LAYER

CONSTRUCTION DETAILS
Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/24/86	**File:** 6-3030
Scale: Not to Scale	**FIGURE 11**

1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9092

ATEC

FIELD DATA/
BORING LOGS

DRILLING LOG

State Indiana

Site Conservation Chemical

Boring No. C6

Drilling Firm Canonie

Type of Drill -

Driller Norm

Geologist Ron St. John

Start Date October 11, 1983

Completion Date October 11, 1983

Ground El. 97.39

Groundwater El.
at completion -

after 7 days 89.84

Total Depth of Boring 15.0 feet

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	8	Sand				
		End of Boring				
	16	Well Specifications: - 5'2" I.D. stainless steel well screen - 9' galvanized pipe, 2" I.D. - Grouted with cement - Secured with casing protector and lock. - Well screen from 6.5 to 11.5'				

Note: Drilling performed by Canonie.

DRILLING LOG

State: Indiana	Start Date: October 7, 1983
Site: Conservation Chemical	Completion Date: October 7, 1983
Boring No.: C1	Ground El.: 97.49 feet
Drilling Firm: Canonie	Groundwater El. at completion:
Type of Drill:	after 11 days: 90.43
Driller: Norm	Total Depth of Boring: 42.0 feet
Geologist: Ron St. John	

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	2	Augered from 0-24 feet				
	4					
	6					
	8					
	10					
	12					
	14					
	16					
	18					
	20					

Note: Drilling performed by Canonie

DRILLING LOG

State Indiana	Start Date October 7, 1983
Site Conservation Chemical	Completion Date October 7, 1983
Boring No. C2	Ground El. 97.56
Drilling Firm Canonie	Groundwater El. at completion -
Type of Drill -	after 11 days 91.02
Driller Norm	Total Depth of Boring 12.0 feet
Geologist Ron St. John	

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	4	Sand - augered with no samples			Water/oil mixture at 7 feet	
	8					
	12	End of Boring				
	14	Well specifications: - 5',2" I.D. stainless steel well screen				
	16	- 9' galvanized pipe 2" I.D. - Grouted with cement				
	18	- Secured with casing protector and lock				
	20	- Well screen from 7 to 12 feet				
	22					
	24					
	26					

Note; Drilling performed by Canonie.

State Indiana

Site Conservation Chemical

Boring No. C1

Page 2 of 2

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
	22					
		Black oily sand				
	24	Tan, well sorted, fine grained sand				
	26					
	28	Tan, well sorted, fine grained sand				
	30					
	32	Tan, fine to medium grain sand				
	34					
	36	Tan, fine to medium grain sand				
	38					
	40	Tan, fine to medium grain sand				
	42	Gray Clayey Till - End of Boring				
		Well specifications: - 5', 2" I.D. stainless steel well screen - 4 - 10.0' galvanized pipe, 2" I.D. - Grouted with cement - Secured with casing protector and lock. - Well screen from 37 to 42 feet				

Note: Drilling performed by Canonie.

DRILLING LOG

State Indiana

Site Conservation Chemical

Boring No. C3

Drilling Firm Canonie

Type of Drill -

Driller Norm

Geologist Ron St. John

Start Date October 10, 1983

Completion Date October 10, 1983

Ground El. 98.05

Groundwater El.
at completion -

after 8 days 91.27

Total Depth of Boring 12.0 feet

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	20	See log for C1				
	40	End of Boring				
		Well specifications: - 5',2" I.D. stainless steel well screen - 3 - 10.0' galvanized pipe, 2" I.D. - Grouted with cement - Secured with casing protector and lock - Well screen from 26 to 31 feet				

Note: Drilling performed by Canonie.

DRILLING LOG

State Indiana

Site Conservation Chemical

Boring No. C4

Drilling Firm Canonie

Type of Drill -

Driller Norm

Geologist Ron St. John

Start Date October 11, 1983

Completion Date October 11, 1983

Ground El. 97.84

Groundwater El.
at completion -

after 7 days 91.27

Total Depth of Boring 15.0 feet

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	5 10 15	End of Boring Well specifications: - Well set at 15.0 feet - 5'2" I.D. stainless steel well screen - 9' galvanized pipe, 2" I.D. - Grouted with cement - Secured with casing protector and lock. - Well screen from 8.5 to 13.5 feet				

Note: Drilling performed by Canonie.

DRILLING LOG

State Indiana

Site Conservation Chemical

Boring No. C5

Drilling Firm Canonie

Type of Drill -

Driller Norm

Geologist Ron St. John

Start Date October 11, 1983

Completion Date October 11, 1983

Ground El. 97.56

Groundwater El.
at completion -

after 7 days 89.90

Total Depth of Boring 25.0 feet

Elev.	Depth	Description	Blow Count	Sample No.	Remarks	Well Const.
97.44		Ground Surface				
	12	Sand			High concentrations of oil like material at 25'.	
	25	End of Boring				
		Well Specifications: - 5'2" I.D. stainless steel well screen - 2 - 10.0' galvanized pipe, 2" I.D. - Grouted with cement - Secured with casing protector and lock. - Well screen from 17 to 22 feet				

Note: Drilling performed by Canonie.

LABORATORY
DATA/SOILS

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41439

Sample Description: 3868 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No sulfides were detected when exposed to pH conditions between 2 and 12.5. Cyanide was detected when exposed to pH conditions between 2 and 12.5 (262 mg/kg).

F. The sample did not detonate, explosively decompose or react at standard temperature and pressures.

II. CORROSIVITY (by pH)

The pH of a 1:10 slurry of the sample with reagent water was 6.

III. IGNITABILITY

A. Physical Description

The sample was a thick black grease-like paste. The sample had a paint-like odor. The sample was homogeneous.

B. Exposure to an Open Flame at Ambient

The sample was exposed to an open flame at room temperature. The sample ignited with visible flames which spread throughout the sample.

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KMV

Clayton Sample Number: 41439 (cont.)

Sample Description: 3868 Drum Sample, Liquid

C. Exposure to an Open Flame at 60°C

The sample was exposed to an open flame at 60°C. The sample again ignited with visible flames which spread throughout the sample.

D. Gradual Heating to 400°C

The sample was heated gradually in an electric muffle furnace to 300°C. At 225°C the sample began to smoke and bubble. This continued as the temperature rose to 400°C.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Envireponse, Inc.

Clayton Project No. 10990-47 KMV

Lab Number	Sample Description	Arsenic (mg/lit)	Arsenic L.O.D (mg/lit)	Barium (mg/lit)	Barium L.O.D (mg/lit)	Cadmium (mg/lit)	Cadmium L.O.D (mg/lit)	Chromium (mg/lit)	Chromium L.O.D (mg/lit)
1425 (1)	3854 Drum Sample Solid	< 0.005	0.005	< 0.300	0.300	< 0.030	0.030	0.110	0.100
1426 (1)	3855 Tank Sample Semisolid	< 0.002	0.002	< 0.300	0.300	< 0.030	0.030	< 0.100	0.100
1427 (1)	3856 Tank Sample Solid	< 0.003	0.003	< 0.300	0.300	0.050	0.030	< 0.100	0.100
1428 (2)	3857 Drum Sample Liquid/Solid	< 0.003	0.003	0.310	0.300	< 0.030	0.030	< 0.100	0.100
~~1512 (2)~~	~~3882~~	~~< 0.003~~	~~0.003~~	~~< 0.300~~	~~0.300~~	~~0.030~~	~~0.030~~	~~0.100~~	~~0.100~~

Analytical Method: (1) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-846

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 RHV

Lab Number	Sample Description	Lead (mg/lit)	Lead L.O.D (mg/lit)	Mercury (mg/lit)	Mercury L.O.D (mg/lit)	Selenium (mg/lit)	Selenium L.O.D (mg/lit)	Silver (mg/lit)	Silver L.O.D (mg/lit)
1425 (1)	3854 Drum Sample Solid	1.16	0.200	0.0054	0.0005	< 2.00	2.00	< 0.060	0.060
1426 (1)	3855 Tank Sample Semisolid	< 0.200	0.200	< 0.0005	0.0005	< 0.004	0.004	< 0.060	0.060
1427 (1)	3856 Tank Sample Solid	2.31	0.200	0.012	0.0005	< 0.004	0.004	< 0.060	0.060
1428 (2)	3857 Drum Sample Liquid/Solid	< 0.200	0.200	< 0.0005	0.0005	< 0.004	0.004	< 0.060	0.060
~~1512 (2)~~	~~3882~~	~~0.200~~	~~0.200~~	~~0.0005~~	~~0.0005~~	~~< 0.020~~	~~0.020~~	~~< 0.060~~	~~0.060~~

Analytical Method: (1) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-846

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47

Lab umber	Sample Description	Lindane (mg/lit)	Lindane L.O.D (mg/lit)	Endrin (mg/lit)	Endrin L.O.D (mg/lit)	Methoxychlor (mg/lit)	Methoxychlor L.O.D (mg/lit)	Toxaphene (mg/lit)	Toxaphene L.O.D (mg/lit)
1425 (1)	3854 Drum Sample Solid	< 0.0002	0.0002	< 0.0002	0.0002	< 0.002	0.002	< 0.004	0.004
1426 (1)	3855 Tank Sample Semisolid	< 0.0002	0.0002	< 0.0002	0.0002	< 0.002	0.002	< 0.004	0.004
1427 (1)	3856 Tank Sample Solid	< 0.004	0.004	< 0.004	0.004	< 0.04	0.04	< 0.08	0.08
1428 (2)	3857 Drum Sample Liquid/Solid	< 0.001	0.001	< 0.001	0.001	< 0.01	0.01	< 0.02	0.02
~~1512 (2)~~	~~3883~~	~~< 0.008~~	~~0.008~~	~~< 0.008~~	~~0.008~~	~~< 0.08~~	~~0.08~~	~~< 0.16~~	~~0.16~~

nalytical Method: (1) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-846

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHU

Lab Number	Sample Description	2,4-D (mg/lit)	2,4-D L.O.D (mg/lit)	2,4,5-TP (mg/lit)	2,4,5-TP L.O.D (mg/lit)
1425 (1)	3854 Drum Sample Solid	< 0.004	0.004	< 0.004	0.004
1426 (1)	3855 Tank Sample Semisolid	< 0.004	0.004	< 0.004	0.004
1427 (1)	3856 Tank Sample Solid	< 0.08	0.08	< 0.08	0.08
1428 (2)	3857 Drum Sample Liquid/Solid	< 0.02	0.02	< 0.02	0.02
~~1512 (2)~~	~~3383~~	~~< 0.08~~	~~0.08~~	~~0.08~~	~~0.08~~

Analytical Method: (1) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-846

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHJ

Lab Number	Sample Description		Arsenic (mg/lit)	Arsenic L.O.D (mg/lit)	Barium (mg/lit)	Barium L.O.D (mg/lit)	Cadmium (mg/lit)	Cadmium L.O.D (mg/lit)	Chromium (mg/lit)	Chromium L.O.D (mg/lit)
1433	3862 Drum Sample Liquid	Leachate Fraction	< 0.003	0.003	< 0.300	0.300	< 0.030	0.030	< 0.100	0.100
			(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)
		Oil Fraction	< 1.11	1.11	< 0.750	0.750	< 0.075	0.075	2.70	0.250

Analytical Method: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods."
Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Envirésponse, Inc.

Clayton Project No. 10990-47 ENV

ab umber	Sample Description		Lead		Mercury		Selenium		Silver	
			(mg/lit)	L.O.D (mg/lit)	(mg/lit)	L.O.D (mg/lit)	(mg/lit)	L.O.D (mg/lit)	(mg/lit)	L.O.D (mg/lit
1433	3862 Drum Sample Liquid	Leachate Fraction	< 0.200	0.200	< 0.0005	0.0005	< 0.004	0.004	< 0.060	0.060
			(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)
		Oil Fraction	< 0.500	0.500	0.136	0.049	< 0.444	0.444	< 0.150	0.150

nalytical Method: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods."
Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47

Lab umber	Sample Description		Lindane (mg/lit)	Lindane L.O.D (mg/lit)	Endrin (mg/lit)	Endrin L.O.D (mg/lit)	Methoxychlor (mg/lit)	Methoxychlor L.O.D (mg/lit)	Toxaphene (mg/lit)	Toxaphene L.O.D (mg/lit)
1433	3862 Drum Sample Liquid	Leachate Fraction	< 0.006	0.006	< 0.006	0.006	< 0.06	0.06	< 0.11	0.11
			(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)
		Oil Fraction	< 0.12	0.12	< 0.15	0.15	< 0.41	0.41	< 2.1	2.1

nalytical Method: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods."
Method #1310 as described in EPA SW-841

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KIV

Lab umber	Sample Description		2,4-D (mg/lit)	2,4-D L.O.D (mg/lit)	2,3,5-TP (mg/lit)	2,3,5-TP L.O.D (mg/lit)
1433	3862 Drum Sample Liquid	Leachate Fraction	< 0.11	0.11	< 0.11	0.11
			(µg/g)	L.O.D (µg/g)	(µg/g)	L.O.D (µg/g)
		Oil Fraction	< 2.0	2.0	< 2.0	2.0

nalytical Method: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods."
Method #1310 as described in EPA SW-841

TABLE 1. CONSERVATION CHEMICAL VOA RESULTS

Results in mg/l unless otherwise noted

	3854	3855	3856	3857	** 3858	3859	3860	3861	3862	3863	3864	3865	3866	* 3867	3868
Methylene Chloride	ND	120	ND	1,100	ND	ND	ND	334	ND	190	ND	ND	ND	ND	360
1,1,1-Trichloroethane	ND	ND	ND	ND	6,300	40,000	18,000	150	300	ND	ND	ND	6,700	ND	ND
Bromodichloromethane	1,500	140	220	250	ND	ND	ND	190	ND	150	160	ND	ND	ND	170
Trichloroethylene	ND	ND	ND	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	700g/l	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	6,200	ND	110g/l	6,500	26,000	ND	340	ND	ND	ND	300	ND	ND
Ethyl Benzene	ND	ND	ND	ND	120g/l	160g/l	160g/l	ND	1,700	ND	ND	ND	44,000	2,300	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Detection limit for all compounds anlayzed for is 100 mg/l.

* Detection limit for sample #3867 is 500 mg/l
** Detection limit for sample #3858 is 200 mg/l

General Testing Laboratories, Inc.
Engineering — Chemical Consultants
1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

file · cus

50 Years of Service

Date September 4, 1981

Number 39839

Sample of Oils (2)

Marked Received in lab 8/21/81

Client Conservation Chemical Co.

Polychlorinated Biphenyls

	Tank #22 Top	Tank #22 Bottom
AROCLOR 1016:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1221:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1232:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1242:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1248:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1254:	less than 1.0 ppm	less than 1.0 ppm
AROCLOR 1260:	30 ppm	47 ppm

RECEIVED
SEP 08 1981
CONSERVATION CHEMICAL CO.

GENERAL TESTING LABORATORIES, INC

By Lawrence Bisner

(1)gs

General Testing Laboratories, Inc.
Engineering — Chemical Consultants
1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

Over 50 Years

Date September 30 198__ Number 47864

Sample of Oil Samples P. O. # 61647

Marked Received in lab 9-26-83

Client Conservation Chemical Co.

Polychlorinated Biphenyls

Sample No. 1 (Bottom 1 foot)
AROCLOR 1254 59 ppm *
* oil layer only

Sample No. 2 (2 foot off bottom)
AROCLOR 1254 121 ppm

Sample No. 3 (4 foot from bottom)
AROCLOR 1254 1,256 ppm

Sample No. 4 (4 foot off bottom)
AROCLOR 1254 133 ppm

Sample No. 5 (Tank 19-PCB)
AROCLOR 1254 108 ppm

GENERAL TESTING LABORATORIES, INC.

By Lawrence Poirier

(1)cl

Form 110B

General Testing Laboratories, Inc.

Engineering — Chemical Consultants

1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

Over 50 Years — General Testing Laboratories, Inc.

Date October 20 1983 Number 47941

Sample of 4 Oil Samples

Marked Tank 22, Gary, Indiana - Received in lab 10-11-83

Client Conservation Chemical Co.

Polychlorinated Biphenyls

Sample # 6 - Bottom
AROCLOR 1254 45 ppm

Sample # 7 - 2 Feet off Bottom
AROCLOR 1254 65 ppm

Sample # 8 - 2 Feet from Top
AROCLOR 1254 76 ppm

Sample # 9 - Top
AROCLOR 1254 68 ppm

GENERAL TESTING LABORATORIES, INC.

By Laurence Poisson

(1)cl

Form 110B

GTL General Testing Laboratories, Inc.
Engineering — Chemical Consultants
1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

copy

OVER 50 Years GENERAL TESTING LABORATORIES, INC.

Date October 10 1985 Number 56548

Sample of Sludge

Marked Sample of Solids Basin #9, Received in lab 9-19-85

Client Conservation Chemical Co., ATTN: Don Grimmitt

EP Toxicity (Leachate) SW-846, Method 1310, 1982
CFR-40-261.24 EPA Toxicity Max

Lead	5	0.20 mg/liter
Mercury	.2	0.0049 mg/liter
Cadmium	1	0.04 mg/liter
Arsenic	5	<0.005 mg/liter
Chromium	5	<0.01 mg/liter

RECEIVED
OCT 11 1985

Polychlorinated Biphenyls (as received)

Aroclor 1242	28 ppm

cc: Conservation Chemical Co., ATTN: Norman Hjerstedt

K049 Slop oil emulsion solids from the petroleum refining industry.
K050 Heat exchanger bundle cleaning sludge from the petroleum refining industry
K051 API separator sludge from petroleum refining industry
K052 Tank bottoms (leaded)

K062 Spent pickle liquor from steel finishing operations.

GENERAL TESTING LABORATORIES, INC.

By Lawrence Poirier

(1)gm

Form 110B

General Testing Laboratories, Inc.

Engineering — Chemical Consultants

1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

General Testing Laboratories, Inc. 50 Years of Service

Date November 11 1985

Number 57349

Sample of 7 Sludges

Marked Received in lab 11-4-85

Client Conservation Chemical, ATTN: Norman Hjersted

	Serial No. #1 150 Ft from rail switch	Serial No. #2 75 Ft from embankment	Serial No. #3 75 Ft from #2 90°right	Serial No. #4 150 Ft from #3 ahead
Aroclor 1016:	ND	ND	ND	ND
Aroclor 1221:	ND	ND	ND	ND
Aroclor 1232:	ND	ND	ND	ND
Aroclor 1242:	ND	ND	ND	ND
Aroclor 1248:	ND	ND	ND	ND
Aroclor 1254:	ND	ND	ND	ND
Aroclor 1260:	ND	ND	ND	ND
Aroclor 1262:	ND	ND	ND	ND

cc: Conservation Chemical, ATTN: Don Grimmet

GENERAL TESTING LABORATORIES, INC.

By Laurence Poisner

(2)gm

Form 110C

General Testing Laboratories, Inc.

Engineering — Chemical Consultants

1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205

GENERAL TESTING LABORATORIES, INC. 50 Years of Service

Date November 11 1985

Number 57349

Sample of 7 Sludges

Marked Received in lab 11-4-85

Client Conservation Chemical, ATTN: Norman Hjersted

	Serial No. #5 150 Ft. from #4	Serial No. Tank 19 Oil Sample from Bottom	Serial No. No Label
Aroclor 1016:	ND	ND	ND
Aroclor 1221:	ND	ND	ND
Aroclor 1232:	ND	ND	ND
Aroclor 1242:	ND	ND	ND
Aroclor 1248:	ND	ND	ND
Aroclor 1254:	ND	128 ppm	ND
Aroclor 1260:	ND	ND	ND
Aroclor 1262:	ND	ND	ND

ND=None Detected

GENERAL TESTING LABORATORIES, INC.

By Laurence Poisner

(2)gm

Form 110C

ENVIRONMENTAL ANALYSIS, INC.

ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES

3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Date 06-15-84
Report No. 15098
Lab No. 505628,29,30
P.O. No.

Mr. D. Conley
CONSERVATION CHEMICAL CO.
#10 Breman Avenue
St. Louis, MO 63147

REPORT OF ANALYSIS

Subject: Analysis of waste samples performed in accordance with the Resource Conservation and Recovery Act 40 CFR; 261.24 - Characteristic of EP Toxicity; and Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980.

Sample Identification:

#2 - Neutralized Acid, 5-31-84. Tank 20

Results of Analysis:

	# 2
EP Toxicity, Test Method No.	261.24
Arsenic, mg As/l	0.015
Barium, mg Ba/l	<0.05
Cadmium, mg Cd/l	0.492
Chromium, (hex.) mg Cr/	<0.125
Lead, mg Pb/l	0.14
Mercury, mg Hg/l	<0.002
Selenium, mg Se/l	<0.010
Silver, mg Ag/l	0.010

Respectfully submitted,

R. M. [illegible], Director C-20

ENVIRONMENTAL ANALYSIS, INC.
ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES
3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Date 06-15-84
Report No. 15098
Lab No. 505628,29,
P.O. No.

Mr. D. Conley
CONSERVATION CHEMICAL CO.
#10 Breman Avenue
St. Louis, MO 63147

REPORT OF ANALYSIS

Subject: Analysis of waste samples performed in accordance with the Resource Conservation and Recovery Act 40 CFR; 261.24 - Characteristic of EP Toxicity; and Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980.

Sample Identification:
#1 - Paint - Red, 5-31-84. 5 Drums

#3 - Lapping Oil, 5-31-84. 23 Drums

Results of Analysis:

	# 1	# 3
EP Toxicity, Test Method No.	261.24	261.24
Arsenic, mg As/l	<0.005	0.002
Barium, mg Ba/l	<0.05	0.32
Cadmium, mg Cd/l	<0.001	0.016
Chromium, (hex.) mg Cr/	<0.125	<0.125
Lead, mg Pb/l	1.62	1.28
Mercury, mg Hg/l	<0.002	<0.002
Selenium, mg Se/l	<0.010	<0.010
Silver, mg Ag/l	0.015	<0.001

Respectfully submitted,

R. M. Ferris, Director

ENVIRONMENTAL ANALYSIS, INC.

ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES

3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Date	06-15-84
Report No.	15097
Lab No.	505622 thru 27
P.O. No.	

Mr. D. Conley
CONSERVATION CHEMICAL CO.
#10 Breman Avenue
St. Louis, MO 63147

REPORT OF ANALYSIS

Subject: Analysis of waste samples performed in accordance with the Resource Conservation and Recovery Act 40 CFR; 261.24 - Characteristic of EP Toxicity; and Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980.

Sample Identification:
#1 - Cyanide Solution, 5-31-84. Mixture of all the tanks
#2 - Herbicide Drums, 5-31-84. 1 Drum
#3 - Paint Residue, 5-31-84. 6 Drums
#4 - Paint Residue - Green, 5-31-84. 2 Drums
#5 - Copper Drums, 5-31-84. 14 Drums
#6 - White Crystals, 5-31-84. 4 Drums

Results of Analysis:

	# 1	# 2	# 3	# 4	# 5	# 6
EP Toxicity, Test Method No.	261.24	261.24	261.24	261.24	261.24	261.24
Arsenic, mg As/l	6.25	0.007	0.150	0.008	0.008	0.023
Barium, mg Ba/l	0.080	<0.50	1.73	<0.05	<0.05	<0.05
Cadmium, mg Cd/l	14.4	0.037	0.110	0.052	0.070	2.09
Chromium, (hex.) mg Cr/l	<0.125	<0.125	187000	38.5	<0.125	0.125
Lead, mg Pb/l	3.80	3.86	9.26	0.74	0.29	0.11
ercury, mg Hg/l	<0.002	<0.002	0.172	0.014	<0.002	<0.002

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ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES

3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Results of Analysis:

Date 06-15-84
Report No. 15097

	# 1	# 2	# 3	# 4	# 5	# 6
Selenium, mg Se/l	0.030	<0.010	0.022	0.069	<0.010	<0.010
Silver, mg Ag/l	0.442	0.007	2.58	0.069	0.009	0.010

Respectfully submitted,

R. M. Ferris, Director

ENVIRONMENTAL ANALYSIS, INC.

ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES

3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Date 06-15-84
Report No. 15098
Lab No. 505628,29,30
P.O. No.

Mr. D. Conley
CONSERVATION CHEMICAL CO.
#10 Breman Avenue
St. Louis, MO 63147

REPORT OF ANALYSIS

Subject: Analysis of waste samples performed in accordance with the Resource Conservation and Recovery Act 40 CFR; 261.24 - Characteristic of EP Toxicity; and Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980.

Sample Identification:
#1 - Paint - Red, 5-31-84. 5 Drums
#2 - Neutralized Acid, 5-31-84. Tank 20
#3 - Lapping Oil, 5-31-84. 23 Drums

Results of Analysis:

	# 1	# 2	# 3
EP Toxicity, Test Method No.	261.24	261.24	261.24
Arsenic, mg As/l	<0.005	0.015	0.002
Barium, mg Ba/l	<0.05	<0.05	0.32
Cadmium, mg Cd/l	<0.001	0.492	0.016
Chromium, (hex.) mg Cr/	<0.125	<0.125	<0.125
Lead, mg Pb/l	1.62	0.14	1.28
Mercury, mg Hg/l	<0.002	<0.002	<0.002
Selenium, mg Se/l	<0.010	<0.010	<0.010
Silver, mg Ag/l	0.015	0.010	<0.001

Respectfully submitted,

ENVIRONMENTAL ANALYSIS, INC.

ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES

3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Date 06-15-84
Report No. 15097
Lab No. 505622 thru 2
P.O. No.

Mr. D. Conley
CONSERVATION CHEMICAL CO.
#10 Breman Avenue
St. Louis, MO 63147

REPORT OF ANALYSIS

Subject: Analysis of waste samples performed in accordance with the Resource Conservation and Recovery Act 40 CFR; 261.24 - Characteristic of EP Toxicity; and Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980.

Sample Identification:

#2 - Herbicide Drums, 5-31-84. 1 Drum
#3 - Paint Residue, 5-31-84. 6 Drums
#4 - Paint Residue - Green, 5-31-84. 2 Drums
#5 - Copper Drums, 5-31-84. 14 Drums
#6 - White Crystals, 5-31-84. 4 Drums

Results of Analysis:

	# 2	# 3	# 4	# 5	# 6
EP Toxicity, Test Method No.	261.24	261.24	261.24	261.24	261.24
Arsenic, mg As/l	0.007	0.150	0.008	0.008	0.023
Barium, mg Ba/l	<0.50	1.73	<0.05	<0.05	<0.05
Cadmium, mg Cd/l	0.037	0.110	0.052	0.070	2.09
Chromium, (hex.) mg Cr/l	<0.125	187000	38.5	<0.125	0.125
Lead, mg Pb/l	3.86	9.26	0.74	0.29	0.11
Mercury, mg Hg/l	<0.002	0.172	0.014	<0.002	<0.002

ENVIRONMENTAL ANALYSIS, INC.
ANALYTICAL CHEMISTRY · RESEARCH · FIELD STUDIES
3278 N. LINDBERGH BLVD. FLORISSANT, MO. 63033 PHONE 1-314-921-4488

Results of Analysis:

Date 06-15-84
Report No. 15097

	# 2	# 3	# 4	# 5	#
Selenium, mg Se/l	<0.010	0.022	0.069	<0.010	<0
Silver, mg Ag/l	0.007	2.58	0.069	0.009	0.

Respectfully submitted,

R. H. Ferris, Director

Basin [illegible] 10-17-72 [illegible]

Tenco Hydro/Aerosciences, Inc.
(Chemical and Engineering Laboratory)
ANALYSIS REPORT

For Conservation Chemical
P. O. Box 6066
Gary, Indiana 46406

Ref. No. 6636
Date October 3, 1972

Lab. No.	Description 9/25/72	Specific Gravity	% Fe (3)	% Fe (2)	% Total Suspended Solids	Total Solids	% Organic Total Solids	Total Dissolved Solids	% Organic Dissolved Solids		COD	Total Alkalinity as $CaCO_3$	Ammonia Nitrogen	Sulfate			
1147	Recheck	/	13.7	.15	/	/	/	/	/	/	/	/	/	/			
1384	Lot 1 A	1.430	13.9	.14	.11	/	/	/	/	/	/	/	/	/			
1385	Rerun 1147	/	13.2	.36	/	/	/	/	/	/	/	/	/	/			
1386	# 1 sludge 9/22	/	/	/	/	49,852	2.92	19,552	1.73	/	59,683	2070	/	/			
1387	# 2 sludge 9/22	/	/	/	/	99,364	1.45	16,364	0.08	/	31,746	360	/	/			
1388	# 3 sludge 9/22	/	/	/	/	/	/	/	/	/	50	/	40.5	250			

#1 Union Oil (76)
#2 Universal Oil Prod
#3 supernatant liquid from Union 76 neutralized with ammonium persulfate

Remarks:

Certified by: [illegible signature]

Form A141-R1

Unless otherwise noted — results in milligram per liter (mg/l)

ENVIRESPONSE, INC.

110 SOUTH ORANGE AVENUE · LIVINGSTON, NEW JERSEY 07039 · PHONE 201-533-1100

ANALYSIS OF SOIL AND DRUM SAMPLES
MOBILE LABORATORY ANALYSIS

Conservation Chemical Site: Gary, Indiana

Project No. 36609190599

November 14, 1985

Submitted by:

ENVIRESPONSE, INC.

11/15/85

J. P. Michalowicz
EI-EERU Project Manager

Dan Chen, Ph.D.
EI-EERU Sampling & Analysis Section Chief

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SECTION VIII

- DATA SHEETS AND CHROMATOGRAMS FOR PCB CALIBRATION RANGE ANALYSIS II

SECTION IX

DATA SHEETS AND CHROMATOGRAMS FOR PCB SAMPLE ANALYSIS II

INTRODUCTION

On September 19, 1985, fifteen drum samples were received by the Mobile Lab stationed at the Mitco II site in Gary, Indiana, from Conservation Chemical. These samples were analyzed for priority pollutant metals by DC plasma emission spectroscopy, volatile organics by purge and trap-flame ionization detector-gas chromatography, and polychlorinated biphenyls (PCBs) by electron capture detector-gas chromatography. The analysis of base neutrals and acid extractables were contracted to an outside laboratory due to problems encountered with the Finnigan Ion Trap.

On October 10, 1985, thirty three additional core samples from sludge lagoons at Conservation Chemical were received by the Mobile Laboratory. These samples were analyzed for priority pollutant metals, iron, calcium, and PCBs.

ANALYTICAL PROCEDURES

Volatile Organic Analysis

A calibration range from 5 to 1500 ppb was prepared using a Supelco Purgeable A and B mixture. A 50 ppb daily standard was analyzed and compared to the original calibration range. The % relative error (% RE) of the daily standards was calculated to determine expected response. A % RE of $\pm$20% was considered acceptable. The samples were quantified based on the response of the daily standard.

One ml of sample was diluted with 10 ml of methanol. Ten ul of this extract was injected into 10 ml of laboratory water and analyzed by purge and trap FID-GC. A surrogate standard of bromochloromethane was spiked into each sample to check purge efficiency. Sample concentrations are reported in ug compound per gram of soil (ppm) unless otherwise noted. The method detection limits for the analysis were 100 ppm, unless otherwise noted, due to the dilution in water. The detection limit for the drum samples are high because of late eluting peaks at high concentrations. Concentrations between 100 and 500 ppm are reported as approximate.

The following is a list of the compounds for which this analysis was performed.

Methylene Chloride	Trichloroethene
1,1-Dichloroethene	Benzene
1,1-Dichloroethane	Dibromochloromethane
trans-1,2-Dichloroethene	1,1,2-Trichloroethane
Chloroform	cis-1,3-Dichloropropane
1,2-Dichloroethane	Bromoform
1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane
Carbon Tetrachloride	Tetrachloroethene
Bromodichloromethane	Toluene
1,2-Dichloropropane	Chlorobenzene
trans-1,3-Dichloropropene	Ethyl Benzene

Results for the volatile organics analysis are reported in Table 1.

PCBs: Analysis I

A calibration range from 51 to 1840 ppb of Aroclor 1260 was prepared using pure Aroclor 1260. A 51 ppb daily standard was analyzed and compared to the original calibration range. The % relative error (% RE) of the daily standard was calculated to determine expected response. A % RE of ±20% was considered acceptable. 500 ul of a 735 ppb Aroclor 1260 standard was injected on a silica sep-pak and eluted with two 2.25 ml portions of hexane. The resulting 73.5 ppb clean standard was calculated to check for losses through the sep-pak. This extract was analyzed daily and used to calculate the samples.

A one gram portion of soil or 1 ml portion of liquid sample was placed in 10 ml of hexane. A 500 ul aliquot of this extract was placed on a silica sep-pak and eluted with two 2.25 ml portions of hexane, yielding a 100x final dilution. A 100,000x dilution was made by taking 50 ul of the 100x diluted extract and placing it into 50 ml of hexane. If no PCBs were detected at the 100,000x dilution, a 1000x dilution and finally the 100x dilution were analyzed by ECD-GC.

The detection limit for Aroclor 1260 was 51 ppb. The method detection limit for 1260 was 5.1 ppm due to the 100x dilution factor unless otherwise noted. These results are presented in Table 2.

PCBs: Analysis II

A calibration range from 100 ppb to 2000 ppb Aroclor 1260 was prepared from an RTP pure standard and analyzed by electron capture detector-gas chromatography (ECD-GC). A 50 ppb standard was also analyzed to determine the instrument detection limit. Aroclor standards of 1016, 1221 1232, 1242, 1248, and 1254 were analyzed daily. Three point calibration ranges of Aroclor 1248 and Aroclor 1254 were also analyzed. A calculated error of ±20% was considered acceptable. Daily standards were compared to the calibration range standards to determine relative error. Again, ±20% was considered acceptable.

Because the liquid samples were not soluble in hexane, they were dissolved in a 50:50 mixture of hexane:acetone (1 ml sample in 10 ml) and then passed through a silica sep-pak for cleanup. The 29 sludge samples were air dried and then shaker extracted with hexane (10 g sample in 20 ml hexane) for 30 minutes. A .5 ml aliquot of each of these was passed through a silica sep-pak and eluted with two 2.5 ml portions of hexane for cleanup. Results of this analysis are presented in Table 3.

The sludge samples did not appear to be homogeneous. Several were streaked with black, tarry-looking oils and miscellaneous fragments of glass, metals, wood, and plastics. The sludge samples were throughly stirred to promote as much uniformity as possible. After drying, the sludge was ground with the bottom of a glass vial to expose as much surface area as possible during extraction. Despite the drying process, many of the samples clumped together into a slimy ball when shaker extracted with the hexane. An extraction of these samples using a 50:50 mixture of hexane:acetone was attempted. In most cases this prevented the clumping of the sample; however the extracts required a second sep-pak cleanup in preparation of the analysis. This raised the total dilution factor to 200X. These samples were analyzed but because of the high dilution factor, no PCBs were detected.

The following is a listing of those samples which did not disperse during the hexane extraction.

Sample 01
Sample 02
Sample 04
Sample 12
Sample 21
Sample 25
Sample 26
Sample 3252
Sample 3253
Sample 3254
Sample 3255
Sample 3256
Sample 3422
Sample 3424

Several of the soil samples contained a mixture of Aroclors 1248 and 1254. An alternative method for calculating each Aroclor was applied. To calculate the concentration of Aroclor 1248 in a sample containing Aroclors 1248 and 1254, the sum of the peak heights of three peaks unique to 1248 were used. To determine the Aroclor 1254 portion of a 1248:1254 mixture, a factor was calculated using the sum of the peak heights of two peaks unique to Aroclor 1254 divided by the peak height of a peak common to both Aroclors in a standard of 1254. This factor was then multiplied by the peak height of the common peak in a sample containing a mixture of 1248 and 1254 to determine the contribution of 1254 in that peak. The sum of the two peaks unique to 1254 plus the adjusted peak height of the common peak were used to determine the concentration of 1254.

This method was tested by preparing two mixtures of Aroclor 1254 and Aroclor 1248 and applying this procedure. The results are summarized below:

MIX 1: 333 ppb Aroclor 1254 : 167 ppb Aroclor 1248

Aroclor	Concentration	% RE
Aroclor 1248	335 ppb	.5
Aroclor 1254	184 ppb	10.1

MIX 2: 400 ppb Aroclor 1248 : 100 ppb Aroclor 1254

Aroclor	Concentration	% RE
1248	416	4.0
1254	154	54.0

The chromatograms and data sheets for this study are contained in the QA/QC data section.

Metals Analysis

Each soil, sediment, and solid sample was mixed thoroughly. A portion of each sample was placed in a small plastic weighing dish in a fume hood to dry for 8-10 hrs. The samples were ground to as fine a powder as possible with the bottom of a glass vial. A 0.5 gram portion of each sample, weighed to the nearest 0.01 grams, was placed in a 70 ml teflon lined digestion bomb. One half milliliter of each liquid sample was pipetted into a digestion bomb. Five milliliters of redistilled concentrated nitric acid was added to each digestion bomb. The sealed bombs were heated for one hour at 60°C and then for 12 hrs at 120°C in an oven. The bombs were allowed to cool to room temperature. The contents of each digestion bomb was quantitatively transferred to a 25 ml volumetric flask and diluted to volume with 2% nitric acid. A system blank was obtained by placing 5 ml of redistilled nitric acid into a clean digestion bomb. The acid was treated as a sample.

Samples 3857, 3867 and 3868 contained two phases. Each phase was treated as a separate sample.

The sample solutions were analyzed for 13 priority pollutant metals and interferring metals using a Spectro-Scan multi-channel DC Plasma emission spectrometer.

The concentration of the metal as ug/g (PPM) was calculated as follows:

$$\frac{\text{(Instrument Readout, Conc. ug/ml)}}{\text{Weight of Sample, g}} \times 25\text{ ml} = \frac{\text{ug of Metal}}{\text{g of Sample}}$$

The instrument manufacturer defines the instrument detection limit as three times the standard deviation of the blank. These detection limits and linear ranges as listed below are determined under ideal conditions.

Metal	Symbol	Wavelength (nm)	Linear Dynamic Range (ug/ml)	Detection Limit (ug/ml)
Antimony	Sb	206.833	1 - 100	0.10
Arsenic	As	193.696	0.8 - 100	0.08
Beryllium	Be	313.042	0.003 - 60	0.0003
Cadmium	Cd	226.502	0.05 - 1000	0.005
Chromium	Cr	267.716	0.1 - 1000	0.01
Copper	Cu	324.754	0.02 - 10	0.002
Lead	Pb	283.306	0.2 - 600	0.02
Mercury	Hg	253.652	0.2 - 1000	0.02
Nickel	Ni	231.604	0.5 - 100	0.05
Selenium	Se	196.026	1 - 1000	0.1
Silver	Ag	328.068	0.04 - 60	0.004
Thallium	Tl	535.046	0.3 - 1000	0.03
Zinc	Zn	202.548	0.06 - 600	0.006

The operational detection limit depends on the performance of the instrument during actual analysis. The operational detection limit is equal to three times the standard deviation of the blank determined during analysis. The operational linear range was determined by analyzing solution standards and using the instrument standardization program. Check standards were analyzed during the analysis of samples.

The results of the priority pollutant metals analysis are summarized in Tables 4 and 5 with detection limits.

Base Neutral/Acid Extractable Analysis

One ml of drum sample was diluted to 100 ml with methylene chloride. One ml of this dilution was contracted out to a service lab. Results will be provided when available from the service laboratory.

pt/4776D:0138D

Table 2. Conservation Chemical PCB Results I

Solid concentration in mg/kg
Liquid concentraton in mg/l

Sample No.	Matrix	Arochlor	Date Analyzed	Concentration
3856	Solid	1260	10/7	12
Tank 19	Liquid	1260	10/7	34
Tank 19	Liquid	1248	10/6	120
Tank 22	Liquid	1260	10/7	44
Tank 22	Liquid	1248	10/6	72
3854	Solid	--	10/3	ND(1)
3855	Solid	--	10/7	ND
3857	Liquid/Solid	--	10/2	ND
3858	Liquid	--	10/6	ND
3859	Liquid	--	10/6	ND
3860	Liquid	--	10/6	ND
3861	Liquid/Solid	--	10/5	ND
3862	Liquid	--	10/5	ND
3863	Liquid	--	10/5	ND
3864	Liquid	--	10/2	ND
3865	Liquid	--	10/3	ND
3866	Liquid	--	10/7	ND
3867	Liquid	--	10/6	ND
3868	Solid	--	10/5	ND

(1) ND = not detected
Detection limit is 5.1 ppm 1260

pt/4776D

Table 3. Conservation Chemical PCB Analysis II

Sample No.	Date Analyzed	Matrix	Detection Limit ug/g	Aroclor Concentration in ug/g (ppm) 1248	1254	1260
1	10/14	Soil	1	ND	ND	ND
2	10/16	Soil	1	ND	ND	28.5
3	10/26	Soil	1	0.63	ND	ND
4	10/26	Soil	1	ND	ND	ND
5	10/26	Soil	1	1.16	ND	ND
6	10/26	Soil	1	ND	ND	ND
7	10/24	Soil	5	ND	ND	ND
8	10/15	Soil	1	ND	ND	ND
10	10/27	Soil	1	ND	ND	ND
11	10/27	Soil	1	ND	ND	ND
12	10/27	Soil	1	ND	ND	ND
13	10/27	Soil	1	ND	ND	ND
14	10/27	Soil	1	ND	1.13	ND
16	10/25	Liquid	5*	ND	ND	ND
17	10/25	Liquid	5*	ND	ND	ND
19	10/25	Liquid	5*	ND	ND	ND
20	10/25	Liquid	5*	ND	ND	ND
21	10/27	Soil	1	ND	ND	ND
22	10/26	Soil	1	6.55	2.56	ND
23	10/28	Soil	1	6.14	2.43	ND
25	10/26	Soil	1	8.62	ND	ND
26	10/26	Soil	1	ND	ND	ND
3252	10/28	Soil	1	1.02	ND	ND
3253	10/28	Soil	1	ND	3.46	ND
3254	10/28	Soil	1	24.0	ND	ND
3255	10/28	Soil	1	2.34	1.07	ND
3256	10/28	Soil	1	4.82	1.64	ND
3257	10/28	Soil	1	3.70	1.27	ND
3412	10/28	Soil	10	ND	ND	ND
3422	10/28	Soil	1	ND	ND	ND
3423	10/26	Soil	1	1.12	2.08	ND
3424	10/28	Soil	1	ND	ND	ND
3425	10/28	Soil	1	1.62	ND	ND

ND = none detected
*units = ug/ml

pt/4776D

Table 4. Priority Pollutant Metal Analysis I

Concentration in solids reported as ug/g (ppm)
Concentration in liquids reported as ug/ml (ppm)

Sample #	Hg	As	Se	Zn	Sb	Cd	Ni	Cr	Cu	Pb	Be	Ag	Tl
3854	86.5	34	9	1090	ND	2.25	17	2	11.6%	27.2	0.20	14.6	ND
3855	13	34	31.0	6	ND	.6	52	4.00	ND	8	0.15	ND	ND
3856	22.0	34	13.4	3580	6.8	23.2	18.5	260	449	4150	0.25	ND	187
3856 Dup.	13	34	13.2	2380	68	15.0	24.0	166	605	2675	0.45	1.30	7
3857-Liquid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3857-Solid	13	34	18.9	42.5	93	.6	ND	2	ND	16.3	ND	ND	ND
3858	13	34	31.0	28.1	68	ND	ND	ND	ND	ND	ND	ND	ND
3859	13	34	ND	71.8	85.5	ND	ND	ND	ND	ND	ND	ND	ND
3860	13	62.1	47.5	32.4	104	1.93	17	2	ND	ND	0.45	ND	ND
3861	12.0	78.1	81.0	8.95	68	1.35	17	2	ND	ND	0.40	ND	ND
3862	13	45.1	9.00	6.90	122	ND	ND	2.10	ND	8	ND	ND	ND
3863	13	34	ND	6	75.5	ND	ND	ND	ND	8	ND	ND	ND
3864	13	34	ND	15.5	116	ND	ND	ND	ND	8	ND	ND	ND
3865	13	83.1	78.5	6	68	.6	17	2	ND	ND	0.45	ND	ND
3866	13	42.7	12.4	15.7	92.6	ND	ND	ND	ND	23.8	ND	ND	ND
3867-upper	13	34	9.78	6	68	3.25	17	2	11	ND	0.65	ND	ND
38[illegible]-lower	715	ND	9.40	7.78	119	4.08	17	2	11	7	0.85	ND	ND
[illegible]-Liquid	169	ND	ND	6.4	68	4.30	17	ND	11	ND	1.10	0.9	ND
[illegible]9-Solid	56.5	ND	ND	13.9	68	8.90	17	ND	11	7	1.55	ND	ND
[illegible]-19	ND	ND	ND	48.3	ND	3.68	24.2	33.3	83.3	51.5	2.20	ND	8.99
TK-22	ND	ND	ND	48.7	ND	2.45	22.3	88.2	161	54.9	0.490	ND	30.8
System Blank	56	2.45	--	--	22.8	3.06	50	29.5	--	--	0.9	--	230
Detection Limit	13	34	9.0	6.	68	0.6	17	2	11	7.7	0.15	0.9	7

ND = not detected

pt/4776D:0138D

Table 5. Priority Pollutant Metals Analysis II

Concentration in Soils & Sediments reported as ug/g (ppm)

Second Set

Sample No.	Hg	As	Se	Zn	Sb	Cd	Ni	Cr	Cu	Pb	Be	Ag	Tl
01	127	ND	ND	2210	234	23.3	503	10,300	4170	293	2.78	2.89	ND
02	ND	ND	25.6	365	388	25.0	197	17,100	2900	956	ND	4.75	8.42
03	202	64.3	17.6	2190	368	73.0	2300	8100	6860	341	ND	ND	ND
04	379	ND	ND	5290	244	14.8	913	1630	30,300	468	1.5	5.70	ND
04 Dup.	23.4	ND	ND	5030	276	24.2	946	1560	24,400	567	54.8	5.61	ND
05	228	24	28.7	1950	490	55.5	5230	8300	8250	1210	ND	4.55	ND
06	108	23.8	17.2	3090	240	63.4	2840	16,200	19,500	446	12.5	6.86	6.86
07	31.6	ND	ND	455	ND	78.7	449	2290	552	4230	0.69	2.11	ND
08	ND	ND	N	278	ND	28.8	76.0	3460	903	934	ND	ND	ND
10	ND	26.2	32.1	159	180	ND	174	6530	1390	1770	0.408	ND	ND
11	2.3	118	77.4	4040	410	159	6620	19,000	22,900	2750	1.47	12.4	50.5
11 Dup.	2.3	130	76.8	4130	419	162	6050	18,200	21,900	2500	1.15	12.7	50.4
12	ND	70.6	64.7	184	391	13.5	81.8	2700	951	496	ND	2.98	28.9
13	ND	373	341	1570	628	66.7	2280	8480	10,800	3980	.15	23.5	ND
16	ND	5.88	ND	6.42	ND	1.42	ND	69.0	32.2	40.8	ND	ND	1.6
17	ND	46.6	ND	5.42	ND	1.15	ND	31.8	30.6	52.3	ND	ND	ND
19	ND	24	ND	10.4	ND	ND	ND	26.5	50.0	92.5	ND	ND	ND
[illegible]	ND	26.0	ND	8.67	ND	ND	ND	44.5	44.0	75.5	ND	ND	ND
[illegible]	124	41.7	24.7	907	297	49.5	823	20,700	6520	851	3.68	14.6	ND
21 Dup.	139	38.4	33.6	810	374	53.8	936	21,200	6760	956	3.46	16.3	ND
22	28.1	44.1	ND	80.4	171	4.21	51.5	11,700	2570	1140	2.20	5.39	ND
23	52.4	78.9	38.7	444	196	20.2	113	3980	13,500	655	1.57	11.1	ND
25	50.0	ND	ND	118	325	35.0	52.5	1280	207	352	.15	2.8	ND
26	111	ND	17	338	341	6.94	1120	1380	2330	938	6.4	13.4	ND
3252	43.2	24	17	2110	118	32.8	864	497	5740	228	8.16	7.34	ND
3253	16.9	ND	ND	304	223	38.8	1370	4190	11,100	670	2.26	6.30	ND
3253 Dup.	10.4	97.3	ND	323	ND	15.4	1210	3220	15,900	514	1.39	3.12	ND
3254	ND	97.7	106	4330	537	57.0	3120	17,000	11,500	1090	9.5	6.8	ND
3255	ND	56.2	53.8	330	206	16.7	402	11,600	11,800	236	2.35	4.03	ND
3256	64.5	44.0	17	1670	232	63.5	2530	23,400	7220	267	27.7	6.65	ND
3257	58.8	54.8	60.8	3050	195	101	2170	36,200	21,200	420	94.1	8.53	13.7
3412	25.7	81.8	64.7	523	61	29.1	960	14,400	5450	541	2.9411.27		ND
3422	173	57.3	49.5	4510	392	38.1	1330	8620	10,200	610	1.47	10.6	ND
3423	110	38.7	34.1	2450	354	848	4630	26,500	13,800	1113	15.2	8.43	ND
3424	95.1	43.1	17	1790	359	48.6	3720	26,200	7950	275	4.00	7.75	ND
3424 Dup.	87.0	57.0	17	1060	321	42.2	3760	25,700	8860	291	3.19	7.99	ND
3425	38.0	38.5	17	572	188	14.4	488	5280	4300	1300	1.30	5.55	ND
Sample D.L.	2.3	24	16.5	1.6	61	1.15	10	2.5	0.65	4.1	0.15	0.55	1.6
[illegible]ar	23	240	165	16	610	11.5	100	25	6.5	41	1.5	5.5	16
[illegible]e	1000	2500	2500	2500	2500	2500	5000	5000	500	1000	50	1000	5000

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CONSERVATION CHEMICAL ANNEX
DRUM SAMPLING AND ANALYSIS

PERFORMED SEPTEMBER 1985
by the
ENVIRONMENTAL RESPONSE TEAM

I. Analytical Results by Mobil Laboratory

a. Priority pollutant volatile organics
b. Polychlorinated biphenyls
c. Priority pollutant metals

II. RCRA Test Results

a. Ignitability
b. Reactivity
c. Corrosivity
d. EP toxicity

III. Field Data Sheets

CONSERVATION CHEMICAL ANNEX VOA RESULTS

Results in mg/l unless otherwise noted

	3854	3855	3856	3857	** 3858	3859	3860	3861	3862	3863	3864	3865	3866	* 3867	3868
ethylene Chloride	ND	120	ND	1,100	ND	ND	ND	334	ND	190	ND	ND	ND	ND	360
,1,1-Trichloroethane	ND	ND	ND	ND	6,300	40,000	18,000	150	300	ND	ND	ND	6,700	ND	ND
romodichloromethane	1,500	140	220	250	ND	ND	ND	190	ND	150	160	ND	ND	ND	170
richloroethylene	ND	ND	ND	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	700g/l	ND
enzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
oluene	ND	ND	6,200	ND	110g/l	6,500	26,000	ND	340	ND	ND	ND	300	ND	ND
thyl Benzene	ND	ND	ND	ND	120g/l	160g/l	160g/l	ND	1,700	ND	ND	ND	44,000	2,300	ND
arbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

etection limit for all compounds anlayzed for is 100 mg/l.

* Detection limit for sample #3867 is 500 mg/l
* Detection limit for sample #3858 is 200 mg/l

Conservation Chemical Annex PCB Results I

Solid concentration in mg/kg
Liquid concentraton in mg/l

Sample No.	Matrix	Arochlor	Date Analyzed	Concentration
3856	Solid	1260	10/7	12
Tank 19	Liquid	1260	10/7	34
Tank 19	Liquid	1248	10/6	120
Tank 22	Liquid	1260	10/7	44
Tank 22	Liquid	1248	10/6	72
3854	Solid	--	10/3	ND(1)
3855	Solid	--	10/7	ND
3857	Liquid/Solid	--	10/2	ND
3858	Liquid	--	10/6	ND
3859	Liquid	--	10/6	ND
3860	Liquid	--	10/6	ND
3861	Liquid/Solid	--	10/5	ND
3862	Liquid	--	10/5	ND
3863	Liquid	--	10/5	ND
3864	Liquid	--	10/2	ND
3865	Liquid	--	10/3	ND
3866	Liquid	--	10/7	ND
3867	Liquid	--	10/6	ND
3868	Solid	--	10/5	ND

(1) ND = not detected
Detection limit is 5.1 ppm 1260

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Conservation Chemical Annex
Priority Pollutant Metal Analysis I

Concentration in solids reported as ug/g (ppm)
Concentration in liquids reported as ug/ml (ppm)

Sample #	Hg	As	Se	Zn	Sb	Cd	Ni	Cr	Cu	Pb	Be	Ag	Tl
3854	86.5	34	9	1090	ND	2.25	17	2	11.6%	27.2	0.20	14.6	ND
3855	13	34	31.0	6	ND	.6	52	4.00	ND	8	0.15	ND	ND
3856	22.0	34	13.4	3580	6.8	23.2	18.5	260	449	4150	0.25	ND	187
3856 Dup.	13	34	13.2	2380	68	15.0	24.0	166	605	2675	0.45	1.30	7
3857-Liquid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3857-Solid	13	34	18.9	42.5	93	.6	ND	2	ND	16.3	ND	ND	ND
3858	13	34	31.0	28.1	68	ND	ND	ND	ND	ND	ND	ND	ND
3859	13	34	ND	71.8	85.5	ND	ND	ND	ND	ND	ND	ND	ND
3860	13	62.1	47.5	32.4	104	1.93	17	2	ND	ND	0.45	ND	ND
3861	12.0	78.1	81.0	8.95	68	1.35	17	2	ND	ND	0.40	ND	ND
3862	13	45.1	9.00	6.90	122	ND	ND	2.10	ND	8	ND	ND	ND
3863	13	34	ND	6	75.5	ND	ND	ND	ND	8	ND	ND	ND
3864	13	34	ND	15.5	116	ND	ND	ND	ND	8	ND	ND	ND
3865	13	83.1	78.5	6	68	.6	17	2	ND	ND	0.45	ND	ND
3866	13	42.7	12.4	15.7	92.6	ND	ND	ND	ND	23.8	ND	ND	ND
3867-upper	13	34	9.78	6	68	3.25	17	2	11	ND	0.65	ND	ND
3867-lower	715	ND	9.40	7.78	119	4.08	17	2	11	7	0.85	ND	ND
38[illegible]Liquid	169	ND	ND	6.4	68	4.30	17	ND	11	ND	1.10	0.9	ND
38[illegible] Solid 3868	56.5	ND	ND	13.9	68	8.90	17	ND	11	7	1.55	ND	ND
TA-19	ND	ND	ND	48.3	ND	3.68	24.2	33.3	83.3	51.5	2.20	ND	8.99
TK-22	ND	ND	ND	48.7	ND	2.45	22.3	88.2	161	54.9	0.490	ND	30.8
System Blank	56	2.45	--	--	22.8	3.06	50	29.5	--	--	0.9	--	230
Detection Limit	13	34	9.0	6.	68	0.6	17	2	11	7.7	0.15	0.9	7

ND = not detected

pt/4776D:0138D

CONSERVATION CHEMICAL ANNEX
RCRA TEST RESULTS

Attached are the complete EP toxicity, ignitability, corrosivity and reactivity results on samples collected by ERT at the Conservation Chemical Annex in September 1985. None of the 5 drum and tank samples containing solids were found to be EP toxic for pesticides or heavy metals. None of the 15 drum and tank samples analyzed were found to exhibit corrosive properties, although a slurry of one sample did have a pH of 2.6. Two of the 15 drum samples analyzed for reactivity showed the presence of cyanide when exposed the pH conditions between 2 and 12. No other reactive properties were noted.

The most prevalent hazardous characteristic of the cross-section of materials sampled from 15 drums and tanks at the Conservation Chemical Annex was ignitability. Five drums contained liquids which flashed using the Pensky Martens Closed Cup Method at ambient temperature (76°F). Two other liquid drum samples flashed at less than the RCRA 140°F ignitability criteria level. In addition to the flammable liquids present, one solid tank sample and one solid drum sample burned readily when exposed to an open flame.

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 ICHV

Clayton Sample Number: 41425

Sample Description: 3854 Drum Sample Solid

I. IGNITABILITY

A. Physical Description

The sample consisted of fine blue crystals of less than 5 millimeters in diameter. The sample had a moldy odor. The sample was homogeneous.

B. Exposure to an Open Flame Ambient

The sample was exposed to an open flame at room temperature. The sample did not ignite or show any signs of combustibility.

C. Exposure to an Open Flame at 60°C

The sample was exposed to an open flame at 60°C. The sample again did not ignite or show any signs of combustibility.

D. Gradual Heating to 400°C

The sample was heated gradually in an electric muffle furnace to 400°C. At 175°C the sample's color began to lighten to a light blue. As the temperature continued to climb the sample turned white. At 275°C the sample began to regain its blue color. The sample turned a yellowish-green color as the temperature reached 300°C. At 375°C the sample turned completely to a green color which changed rapidly to a gray as the temperature climbed to 400°C.

II. REACTIVITY

A. The sample was stable and did not undergo violent changes

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47

Clayton Sample Number: 41425 (cont.)

Sample Description: 3854 Drum Sample Solid

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.25 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperature and pressures.

III. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 2.6.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHO

Clayton Sample Number: 41428

Sample Description: 3857 Drum Sample, Liquid/Solid

I. IGNITABILITY

Pensky-Martens Closed Cup Method	°F	90

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.5.

III. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

All analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHU

Clayton Sample Number: 41427

Sample Description: 3856 Tank Sample Solid

I. IGNITABILITY

A. Physical Description

The sample consisted of a light gray solid clump of material with a solvent-like odor. The sample was homogeneous.

B. Exposure to an Open Flame at Ambient

The sample was exposed to an open flame at room temperature. Upon contact with an open flame the sample ignited with visible flames which spread throughout the sample.

C. Exposure to an Open Flame at 60°C

The sample was exposed to an open flame at 60°C. Upon contact with the flame the sample ignited with visible flames which spread throughout the sample.

D. Gradual Heating to 400°C

The sample was heated gradually in an electric muffle furnace to 400°C. At 200°C some liquid began to ooze out of the sample. The sample also began to char. The sample began to smoke at a temperature of 250°C. The sample was completely charred at 375°C. Some glowing appeared as the temperature reached 400°C.

II. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47

Clayton Sample Number: 41427 (cont.)

Sample Description: 3856 Tank Sample Solid

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No sulfides were detected when exposed to pH conditions between 2 and 12.5. Cyanide was detected (0.83 mg/kg) when exposed to pH conditions between 2 and 12.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

III. CORROSIVITY (by pH)

The pH of 1:10 slurry of the sample with reagent water was 5.8.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 ICHU

Clayton Sample Number: 41426

Sample Description: 3855 Tank Sample Semisolid

I. IGNITABILITY - Pensky Martens Closed Cup Method

160°F

II. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.50 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

III. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41429

Sample Description: 3858 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

III. IGNITABILITY

Pensky Martens Closed Cup Method
76°F (Ambient Temperature)

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41430

Sample Description: 3859 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

III. IGNITABILITY

Pensky Martens Closed Cup Method
76°F (Ambient Temperature)

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41431

Sample Description: 3860 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

III. IGNITABILITY

Pensky Martens Closed Cup Method
76°F (Ambient Temperature)

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47

Clayton Sample Number: 41432

Sample Description: 3861 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.27 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 5.

III. IGNITABILITY

Pensky Martens Closed Cup Method
225°F

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHU

Clayton Sample Number: 41433

Sample Description: 3862 Drum Sample, Liquid

I. IGNITABILITY

Pensky-Martens Closed Cup Method °F 95

II. CORROSIVITY

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

III. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

The sample consisted of 24.6% by weight Solid Material and 75.4% by weight Oil. Each phase was analyzed separately for EP TOX metals analysis. Ignitability was performed on the oil phase.

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 ENV

Clayton Sample Number: 41434

Sample Description: 3863 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.26 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 5.5.

III. IGNITABILITY

Pensky Martens Closed Cup Method
235°F.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41435

Sample Description: 3864 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.25 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 5.

III. IGNITABILITY - Pensky Martens Closed Cup Method

The sample began to extinquish the test flame at 120°F. The sample boiled over at 215°F with no flash observed.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41436

Sample Description: 3865 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide (<0.25 mg/kg) or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 4.

III. IGNITABILITY - Pensky Martens Closed Cup Method

The sample began to extinquish the test flame at 120°F. The sample boiled over at 215°F with no flash across the cup observed.

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHU

Clayton Sample Number: 41437

Sample Description: 3866 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 4.

III. IGNITABILITY

Pensky Martens Closed Cup Method
76°F (Ambient Temperature)

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

Clayton Environmental Consultants, Inc.

Results of Analyses

for

Enviresponse, Inc.

Clayton Project No. 10990-47 KHV

Clayton Sample Number: 41438

Sample Description: 3867 Drum Sample, Liquid

I. REACTIVITY

A. The sample was stable and did not undergo violent changes.

B. No reaction was noted when mixed with water.

C. No potential explosive mixtures were formed when mixed with water.

D. No toxic gases, vapors or fumes were generated when mixed with water.

E. No traces of cyanide or sulfide were detected when the sample was exposed to pH conditions between 2 and 12.5.

F. The sample did not detonate, explosively decompose or react at standard temperatures and pressures.

II. CORROSIVITY (by pH)

The pH of a 1 to 10 slurry of the sample to reagent water was 6.

III. IGNITABILITY

Pensky Martens Closed Cup Method
76°F (Ambient Temperature)

Analyses were performed according to methods described in EPA SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

CALCULATIONS

SALISBURY / ATEC

1501 E. MAIN STREET / GRIFFITH, INDIANA 46319

By SS Date 5/19 Subject GROUND WATER FLOW VELOCITY Sheet No. 1 of 1
Chkd. By LWH Date 19-MAY-86 Proj. No. 6-3030

¼" x ¼"

CALCULATION OF "AVERAGE LINEAR VELOCITY," AS DEFINED IN GROUNDWATER BY FREEZE & CHERRY p71.

$$\bar{v} = \frac{K}{n}\frac{\partial h}{\partial l}$$

where: K = hydraulic conductivity
n = porosity
$\frac{\partial h}{\partial l}$ = flow gradient

IN THIS CASE:

$$\bar{v} = \frac{(4 \times 10^{-2}\ \text{cm/sec})(0.003\ \text{cm/cm})}{.3}$$

$$\bar{v} = 4 \times 10^{-4}\ \text{cm/sec}$$

$$\bar{v} = (4 \times 10^{-4}\ \text{cm/sec})(86400\ \text{sec/day})(0.033\ \text{ft/cm})$$

$$\boxed{\bar{v} = 1.1\ \text{ft/day}}$$

WEM 4/4

STATE of INDIANA

INDIANAPOLIS

STATE BOARD OF HEALTH

AN EQUAL OPPORTUNITY EMPLOYER

Address Reply to:
Indiana State Board of Health
1330 West Michigan Street
P. O. Box 1964
Indianapolis, IN 46206-1964

Mr. William Miner, Branch Chief
Hazardous Waste Enforcement Branch
U.S. EPA, Region V
230 South Dearborn Street
Chicago, IL 60604

October 28, 1985

Dear Mr. Miner:

Re: RSR Quemetco, Inc.
EPA I.D. No. IND 000199653
Conservation Chemical
EPA I.D. No. IND 040888992

Enclosed are two (2) RCRA financial assurance referrals from our financial assurance staff. RCRA liability insurance for the above referenced facilities has expired and to date has not been replaced. These facilities were requested to provide this Division with documentation demonstrating a "good faith effort" at obtaining insurance, based upon guidelines supplied by U.S. EPA. It is staffs' opinion that these facilities have not complied with said guidelines.

Staff of the Division of Land Pollution Control, Indiana State Board of Health, will assist in providing any additional information needed in these actions. Specific questions about these facilities should be directed to Ms. Susan Hyndman, C.P.A., at AC 317/243-5140. Thank you in advance for your cooperation.

Very truly yours,

David D. Lamm

David D. Lamm, Director
Division of Land Pollution Control

SH/sk
Enclosures

RECEIVED
OCT 29 1985
U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
HAZARDOUS WASTE ENFORCEMENT BRANCH

PRELIMINARYT REVIEW REPORT (PR)
RCRA FACILITY ASSESSMENT (RFA)

1. Facility Name Conservation Chemical Company
EPA ID # IND 040 888 992
Preparer Clint Fletcher
Date

2. General Description of Facility and Processes:

A. Description: The facility treats hazardous waste pickle liquor (K062) from steel mills. Waste pickle liquor is used to manufacture ferric chloride or ferrous chloride. From prior years' operation, the facility stores the following wastes:
1. F014 & F015 - Cyanide waste
2. F001 & F002 - Spent halogenated solvents
3. D002 - Silica Tetrachloride
4. D003 - Plating solution containing HNO_3 as acid Cutti
5. Tar residues, paint sludges, soil clean-up residue and miscellaneous chemicals stored in containers

B. Information on Solid Waste Management Units (attach additional sheets as needed):

Unit	Release (yes/no/unknown/suspected)
i. Surface impoundment	Suspected
ii. Drum storage, above ground	"
iii. Tank storage, above ground	"
iv. RR tank car storage area	unknown
v. *Chemical/physical treatment area	"
vi. Waste Oil Processing area	"
vii. Solvent Recovery area	"
viii. Other Recycling/Recovery area	"
ix. Spill	"
x. Sump	"

*chemical treatment: neutralization, precipitation, oxidation/reduction
*physical " : evaporation, filtration, carbon sorption, sedimentation, blending

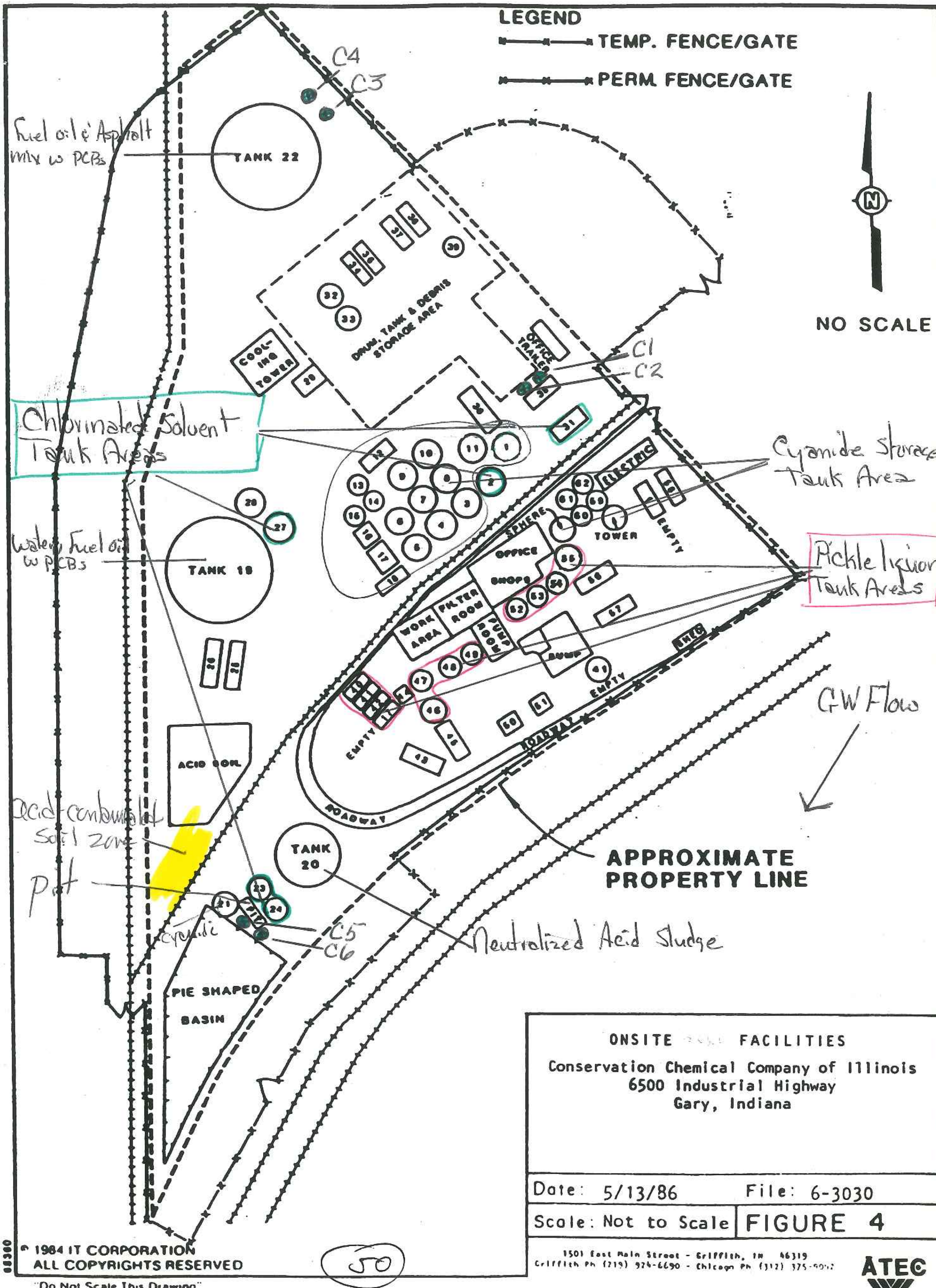
3. Specific Unit Information (prepare one for each unit):

A. Unit Type: Tank Storage
Regulatory Status:
Age:
Capacity:
Period of Operation:
Waste Type:
Volume:
Hazardous Constituents (attach separate sheet):

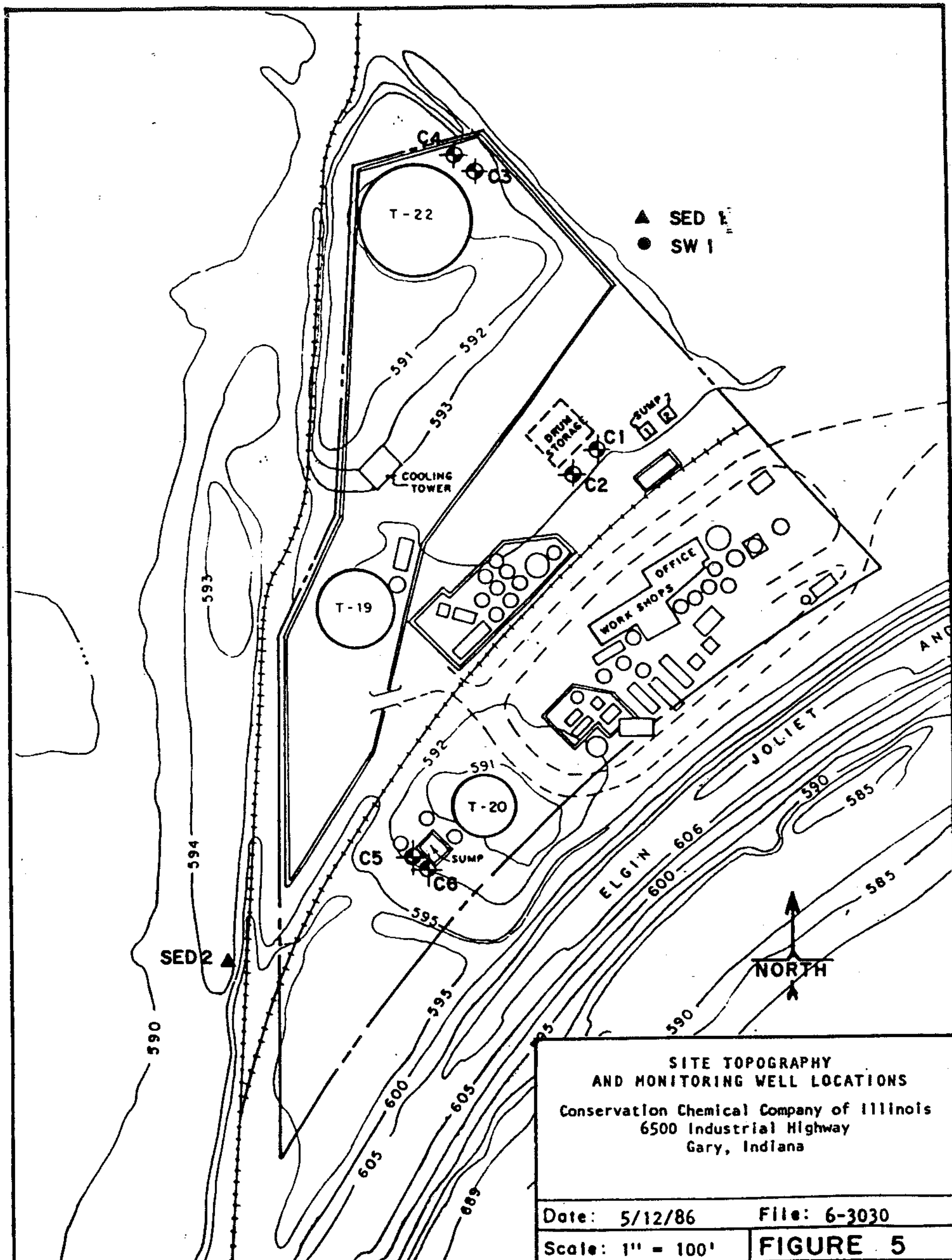
CERCLA ATEC letter 5/23/86, p12

B. Unit Description: 60 tanks present on-site, size: 2,400 to 1,500,000 gal, majority 15,000-25000 gal capacity. Most constructed of steel, some rubber-lined, a few fiberglass
Categories of liquid materials:
1) 500,000 gal neutralized acid sludge (Tank 20)
2) 500,000 gal PCB contaminated fuel oil, asphalt and 166,000 gal water (Tanks 19 & 22)
3) Aggregate of 150,000 gal cyanide solutions in ~ 15 tanks
4) " of 42,300 gal chlorinated solvents in 6 tanks
5) 2,500 gal of silica tetrachloride (Tank 43)
6) 1,400 gal of ferric chloride and pickle liquor in 4 tanks

Additional Information Needed:



LEGEND
TEMP. FENCE/GATE
PERM FENCE/GATE
N
NO SCALE
C4
C3
Fuel oil & Asphalt mix w PCBs
TANK 22
DRUM, TANK & DEBRIS STORAGE AREA
COOLING TOWER
OFFICE TRAILER
C1
C2
Chlorinated Solvent Tank Areas
Cyanide Storage Tank Area
ELECTRIC
SPHERE
TOWER
EMPTY
OFFICE
SHOPS
Water Fuel oil w PCBs
TANK 18
Pickle liquor Tank Areas
WORK AREA
FILTER ROOM
PUMP ROOM
PUMP
SHED
ROADWAY
GW Flow
ACID COIL
acid contaminated soil zone
TANK 20
APPROXIMATE PROPERTY LINE
Pit
cyanide
C5
C6
Neutralized Acid Sludge
PIE SHAPED BASIN
ONSITE FACILITIES
Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana
Date: 5/13/86
File: 6-3030
Scale: Not to Scale
FIGURE 4
1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9932
ATEC
© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED
"Do Not Scale This Drawing"
50



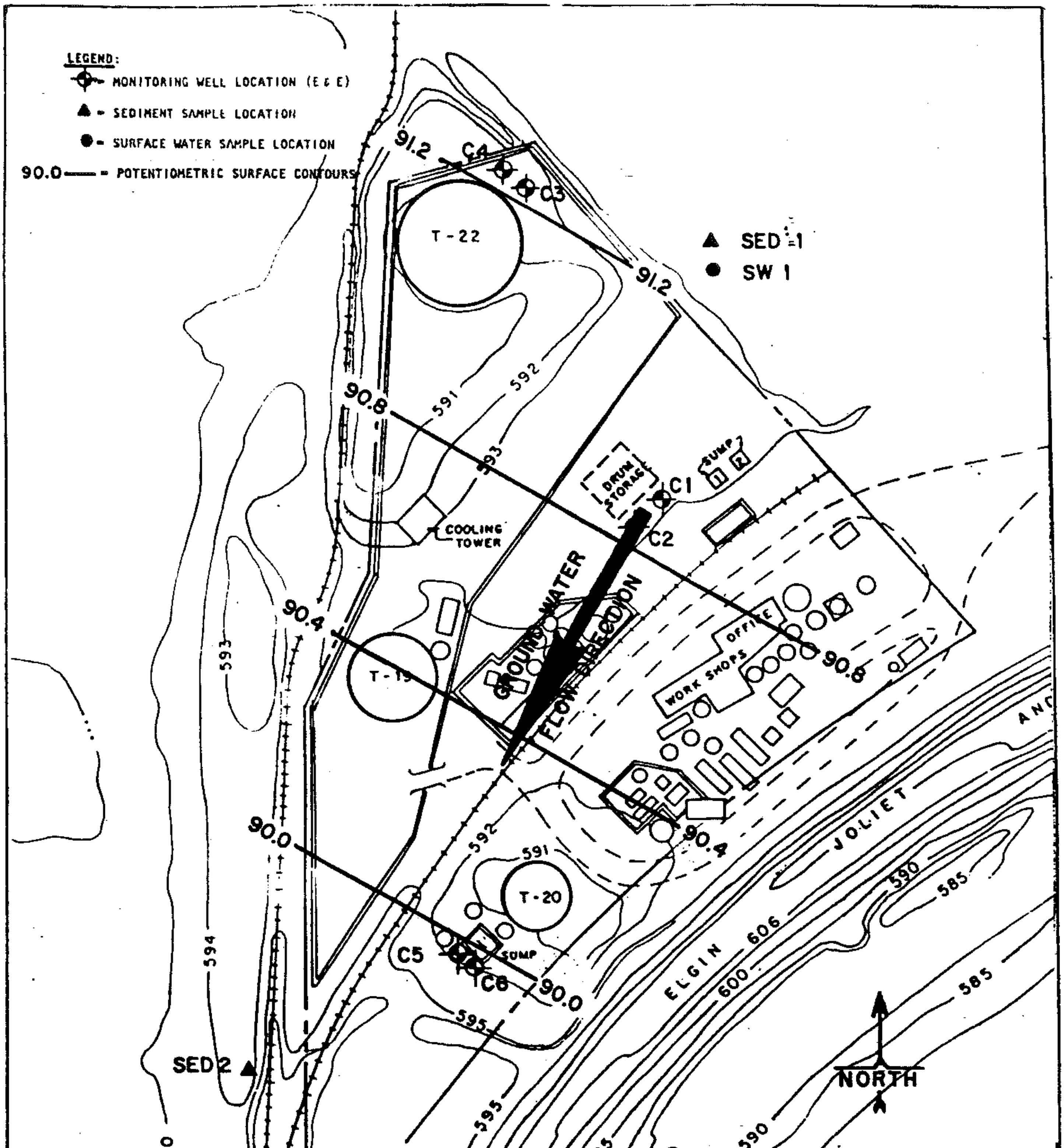
SITE TOPOGRAPHY
AND MONITORING WELL LOCATIONS

Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/12/86 File: 6-3030

Scale: 1" = 100' FIGURE 5

ATEC



SITE POTENTIOMETRIC SURFACE
Conservation Chemical Company of Illinois
6500 Industrial Highway
Gary, Indiana

Date: 5/12/86	File: 6-3030
Scale: 1" = 100'	FIGURE 6

ATEC
1501 East Main Street - Griffith, IN 46319
Griffith Ph (219) 924-6690 - Chicago Ph (312) 375-9052

52

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: Lagoons / Earthen Basins Regulatory Status:
Age:
Capacity:
Period of Operation:
Waste Type:
Volume:
Hazardous Constituents (attach separate sheet):

B. Unit Description: Four earthen basins on site:
1) Pie-shaped basin } iron hydroxides and oily emulsions
2) loft-site basin }
3) Storage tank 19 confining basin } exhibits oily stains in tank 19
4) Storage tank 22 confining basin } overflow from tank 19 area

Additional Information Needed:

C. Monitoring Description (groundwater, surface water, etc.):
On Oct 7-10, 1983 3 sets of monitoring wells were installed (C1 and C2, C3 and C4, C5 and C6). Wells C1, C3, C5 are at depths of 41, 40 and 75 feet, respectively. Shallow wells C2, C4, C6 are at 12, 15 and 15 feet.

Note: Black, oily sand was detected in wells C1 and C5 at 24-25 feet depth and water-oil mixture found at 7-foot depth in well C2

PSI CERCLA Debrief # 3 May 14, 1984

Additional Information Needed:

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: Drum Storage Regulatory Status:
Age:
Capacity:
Period of Operation:
Waste Type:
Volume:
Hazardous Constituents (attach separate sheet):

B. Unit Description: Approximately 154 drums of waste are on site, waste characterized as ignitable

CERCLA ATEC letter 5/23/86, p17

Additional Information Needed:

Facility________________

I.D. No.________________

Page No.   A.

SOLID WASTE MANAGEMENT UNITS AND MAJOR SPILLS

Unit or Spill	LOCATION OF INFORMATION						
	Permit Applic	SWMU Questnr	NPDES Files	Enfrcmt Files	CERCLA Files	State Files	Other
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							

TPS-14 (06/13/86)

Facility

I.D. No.

Page No. B.

SUBJECT B. GENERAL FACILITY DESCRIPTION

Category	Description	Category	Description
1	LOCATION/SETTING/LAND USE/SIZE	5	OPERATIONAL HISTORY
2	INDUSTRY TYPE	6	REGULATORY STATUS
3	PRODUCTS PRODUCED	7	OTHER
4	RAW MATERIALS	8	

++

ITEM	CATEGORY	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION
1	4	stores & treats pickle liquor; stores waste	B, p C-1
		from prior operations (in 121 drums)	C-26
		in tanks (150,000 gal); in tanks	C-33
		(3,000 gal);	C-45
		in tanks (79,680 gal);	C-48
		in tanks (246,000 gal);	C-51
		in Tanks (3,000 gal)	C-51

TPS-15 (06/13/86)

Facility ____________________

I.D. No. ____________________

Page No. C.

SUBJECT C. ENVIRONMENTAL SETTING, HYDROLOGICAL AND GEOLOGICAL CHARACTERISTICS

Category	Description	Category	Description
1	GEOLOGY	7	SOIL DATA
2	WELL LOCATION/CONSTRUCTION ON-SITE	8	ATMOSPHERIC DATA
3	WELL LOCATION/CONSTRUCTION OFF-SITE	9	PHOTOGRAPHS/MAPS
4	GROUNDWATER MONITORING DATA	10	OTHER
5	SURFACE WATER/FLOW DATA & ANALYSIS	11	
6	FLOODPLAIN DATA	12	

++

ITEM	CATEGORY	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION
1	2	Facility has 6 wells for groundwater monitoring,	Part B, p E-1

TPS-16 (06/13/86)

Facility____________

I.D. No.____________

Page No.____ D.

SUBJECT D. WASTE CHARACTERIZATION

Category	Description	Category	Description
1	SOLID WASTES - RCRA IDENTIFIED	4	WASTES - STATE IDENTIFIED
1a	Description/Constituents	4a	Description/Constituents
1b	Amounts placed/spilled - Date	4b	Amounts placed/released
2	SOLID WASTES-ENFORCEMENT IDENTIFIED	5	INSPECTIONS
2a	Description/Constituents	6	STATE PERMITS
2b	Amounts placed/released	7	WASTES - PUBLIC IDENTIFIED
3	SOLID WASTES-CERCLA IDENTIFIED	8	WASTES - OTHER IDENTIFIED
3a	Description/Constituents	9	OTHER
3b	Amounts placed/released		

++

ITEM	CATEGORY	UNIT/ SPILL	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION

Facility
I.D. No.
Page No. E.

SUBJECT E. UNIT/SPILL SPECIFIC INFORMATION

UNIT/SPILL:

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES		

++

ITEM	CATEGORY	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION

TPS-18 (06/13/86)

Facility

I.D. No.

Page No. F.

SUBJECT F. KNOWN & SUSPECTED RELEASES & EXPOSURE POTENTIAL

Category	Description	Category	Description
1	GROUNDWATER	5	CONTAMINATED SOLIDS DISPERSION
1a	Actual releases	5a	Actual releases
1b	Potential releases	5b	Potential releases
1c	Pathways	5c	Pathways
1d	Potential/actual Exposure (human)	5d	Potential/actual Exposure (human)
1e	Activities affected by a release	5e	Activities affected by a release
2	SURFACE WATER	6	TRANSPORTATION RELATED
2a	Actual releases	6a	Actual releases
2b	Potential releases	6b	Potential releases
2c	Pathways	6c	Pathways
2d	Potential/actual Exposure (human)	6d	Potential/actual Exposure (human)
2e	Activities affected by a release	6e	Activities affected by a release
3	AIR	7	FOOD CHAIN CROPS
3a	Actual releases	7a	Actual releases
3b	Potential releases	7b	Potential releases
3c	Pathways	7c	Pathways
3d	Potential/actual Exposure (human)	7d	Potential/actual Exposure (human)
3e	Activities affected by a release	7e	Activities affected by a release
4	SUBSURFACE GAS	8	PUBLIC COMPLAINTS/CONCERNS
4a	Actual releases	9	OTHER
4b	Potential releases		
4c	Pathways		
4d	Potential/actual Exposure (human)		
4e	Activities affected by a release		

++

ITEM	CATEGORY	UNIT/ SPILL	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION

MISCELANEOUS

SITE MAP

Facility____________________

I.D. No.____________________

Page No.____________________

SUBJECT

++

ITEM	CATEGORY	UNIT/ SPILL	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION

TPS-20 (06/13/86)

FACILITY MANAGEMENT PLAN APPROVAL

Facility Name Conservation Chemical Co.

EPA ID Number IND 040888992

Facility Location 6500 Industrial Highway
Gary IN 66406

Date Received from State 01-09-86

Date TPS Review 02-13-86

Date HWEB Review 3/28/86

Date ERRB Review 3/13/86

The Facility Management Plan for this facility is

- ☐ Corrective Action Order
- ☐ Action involving ERRB
- ☐ RCRA permit
- ☒ Other

Brief narrative Currently both Indiana & U.S. EPA have enforcement actions pending against the site. The enforcement actions would clean-up & close the site.

Based on my review, this FMP is hereby approved

Signature Gregor Weber (EPA TPS staff) Date 06-25-86

FACILITY MANAGEMENT PLAN (FMP)
Concurrence Sheet

To: Unit Chief, Hak Cho, Technical Programs Section.
State of Indiana

Name of Facility: Conservation Chemical Co.

Identification Number: IND 040888992

I have reviewed the subject FMP and concur/disagree with the recommended course of action.

Comments: Concur
This facility is likely to enter Chapter 11 Bankruptcy because it can not afford to submit a complete Part B application or close inactive units (e.g. waste piles, surface impoundment container storage). It has approached the Part B application process as a low cost alternative to cleaning up its inactive units (e.g. instead of disposing of drums off site - get a storage permit). It failed to provide complete Part B information on some of units because it was going to close those units and would submit a closure plan later. However, the closure plan was never submitted nor was Part B information submitted on the land disposal units or container storage. The facility could not provide the Part B information for those units because it did not meet the permitting standards.* I concur with the state that the recommended approach is a CERCLA enforcement action.

Greg Wehy 2-13-86
Signature and Date

* no groundwater monitoring, no secondary storage containment, etc.

State Form 4336

Henson

STATE BOARD OF HEALTH

INDIANAPOLIS

OFFICE MEMORANDUM

DATE: January 9, 1986

TO: Conservation Chemical Company
RCRA File

THRU: Bruce H. Palin BHP 1/10/86
Terry F. Gray — TFG 1/14/86

FROM: Christa Henson, Sheryl Atkins CAH 1-10-86
Division of Land Pollution Control

SUBJECT: Facility Management Plan
Conservation Chemical Company
IND 040888992
Gary, Indiana

The Initial Screen for Conservation Chemical Company scored the facility high in nine of ten categories. These ratings result from documentation of continued noncompliance with RCRA requirements, continued spills, the improper disposal of waste, the lack of an appropriate groundwater monitoring plan and the toxicity and potential hazards associated with the stored materials. There is also evidence of buried drums on-site. The site is located adjacent to the Gary Airport.

On November 14, 1985, Messrs. Michael Wirt, Dennis Zawodni, Ted Warner, and Ms. Christa Henson met with Mr. Bill Kimes, EPA Emergency Action Coordinator for the site, and toured the site. Photos were taken and are in the file.

On December 19, 1985, we met with Messrs. Wirt and Zawodni to discuss the status of the above-referenced site. Currently, both the U.S. EPA, Region V, and the State have enforcement actions pending against Conservation Chemical Company for numerous and continued operational violations and a lack of a groundwater monitoring program. One prehearing on the State action has been held with Mr. Hjersted, owner of the facility, but no resolution was reached. A second prehearing has tentatively been scheduled for January 1986. The U.S. EPA's action was filed in 1980, but no resolution has been achieved. The EPA is currently attempting to convince Mr. Hjersted to sign a consent decree which would require Conservation Chemical Company to cease operations at the facility and to submit a RCRA closure plan. The EPA also plans to go to court to request a disclosure of Mr. Hjersted's personal finances and to hold Mr. Hjersted personally liable for the site.

At present, a U.S. EPA Emergency Action Team is on-site cleaning up a PCB spill. They will oversee the removal, by the generators, of the cyanide and acid waste currently stored at the site. The EPA is attempting to stablize the surface impoundments to prevent further contamination. The EPA will also remove the drums and miscellaneous wastes currently stored at the site. The extent of the emergency action cleanup is not yet known.

Following the completion of whatever RCRA closure the EPA is able to force Mr. Hjersted to complete and the emergency cleanup being conducted by the U.S. EPA, the site must be reevaluated for the national priority list. There is a great deal of waste on adjacent property which may or may not be the responsibility of Conservation Chemical Company. A determination of the responsible parties for that material must also be made. In the event that the site does not score high enough for CERCLA cleanup, a State-lead cleanup should be undertaken.

COH/kp
cc: Mr. Michael L. Wirt
Mr. Dennis M. Zawodni
Mr. Ted F. Warner

8. Identification of Hazardous Waste Generated, Treated, Stored or Disposed at the Facility: (may attach Part A or permit list or reference those documents if listing of wastes is exceptionally long - in that case, to complete this question list wastes of greatest interest and/or quantity and note that additional wastes are managed)

Type of Waste	Quantity	Generated, Treated, Stored or Disposed (note appropriate categories)
F001, F002, F003, F005	260T	Stored in tank
F006, K063	2000 T	" " "
F009, F007, F008	450 T	" " "
K049	285T	" " "
K062	15,000T	Treated in tank
K063	500 T	Surface Impoundment Storage
K049	2100 T	" " "

9. Review of Response to Solid Waste Management Questionaire indicates: (check one)

__X__ Solid Waste Management Units exist (other than previously identified RCRA units)

________ No Solid Waste Management Units exist (other than previously identified RCRA units)

________ It is unclear from review of questionaire whether or not any solid Waste Management Units exist

________ Respondent indicates that does not know if any Solid Waste Management Units exist

10. If the response to question 9 is that Solid Waste Management Units exist, than check one of the following:

__X__ Releases of hazardous waste or constituents have occurred or are thought to have occurred

________ Releases of hazardous waste or constituents have not occurred

________ Releases of hazardous waste or constituents have occurred or are thought to have occurred but have been adequately remedied

________ It is not known whether a release of hazardous waste or constituents has occurred

11. The facility is on the National Priorities List or proposed update of the List or ERRIS list

_______ Yes - indicate List or update

_______ No

___X___ Yes - ERRIS list

Prior to completion of the Recommendation portion of the Facility Management Plan, the attached Appendix must be completed.

12. Recommendation for Regional Approach to the Facility: Check one

_____ Further Investigation to Evaluate Facility

_____ Permit Compliance Schedule

__X__ Federal Corrective Action Order (may include compliance schedule)

__X__ State Other Administrative Enforcement

_____ Federal Judicial Enforcement

__X__ Referral to CERCLA for Federally Financed or Enforcement Activity

__X__ Voluntary/Negotiated Action

_____ State Action

Brief narrative in explanation of selection : State Admin action deal with GW problems, Federal Corrective Action deal with RCRA closure. EPA is currently doing some cleanup under Emergency Action. This EA will deal with PCBs, possibly buried drums. Responsible parties to remove cyanide and acid waste. Remaining contamination should be reevaluated for NPL or State lead action

a) If further investigation alternative is selected:

_______ Site inspection - anticipated inspection date _________

State or Federal inspection _____________

_______ Preliminary Assessment - anticipated completion date _________

_______ RI/FS - anticipated date of initiation _____________

State/Federal __________

Private Party __________ identify party(ies)

____

b) If Permit Alternative is Selected: Projected Schedule

Date of Part B Submission: ______________

Date of Completeness Check: ______________

Date for Additional Submissions (if required): ______________

Date of Completion of Technical Review: ______________

Completion of Draft Permit/Permit Denial: ______________

Public Notice for Permit Decision: ______________

Date of Hearing (if appropriate): ______________

Date for Final Permit or Denial Issuance: ______________

Description of any corrective action provisions to be included in permit -

____

____

____

c) If (Federal) Corrective Action Order Alternative is Selected:

Estimated Date for Order Issuance: Jan 86

Description of Provisions of the Order to be Completed by Facility: Require RCRA closure of facility, SIs and tanks

____

Description of Compliance Schedule to be Contained in Order:

____

____

____

d) If (State) Other Administrative Enforcement Action is Selected:

Projected Date for Issuance of the Order: 8-21-85

Description of Provisions or Goals of the Order: Compliance with interim status GW monitoring requirements Compliance with misc paperwork & procedural interim status requirements (This will be moot if EPA forces RCRA Closure)

e) If Judicial Enforcement Alternative Selected:

Date of Referral to Office of Regional Counsel:____________

f) If Referral to CERCLA for Action Selected:

Date of Referral to CERCLA Sections: After all other actions have been evaluated

g) If Voluntary/Negotiated Action Alternative if Selected:

Date of Initial Contact with Facility:____________

Description of Goals of Contact or Discussions with Facility: Responsible parties are to remove cyanide and acid wastes

____

____

Date for Termination of Discussions if Not Successful:

____

Date of Finalization of Settlement if Negotiation Successful:

____

h) If State Action Alternative is Selected:

Date for Referral to State: After all Enforcement actions are resolved and EPA Emergency Action completed and if site rejected from NPL

Name of State Contact:____________

Phone: ____________

APPENDIX

The questions constituting this Appendix to the Facility Management Plan must be filled out prior to completion of recommendation elements of the Plan. The purpose of this appendix is to provide a summary documentation of the State and/or U.S.EPA review of available information on the subject facility. The intent is that a comprehensive file review will be conducted as the basis for selection of the recommended approach to a given facility. If the Appendix is completed by State personnel questions referring to available data reference information in State files; for Federal personnel the reference is to Federal files. Where questions refer to "all" available data or information and such material is voluminous, the response should indicate that files are voluminous, and then reference most telling information, for example groundwater contaminants found frequently or at extremely high concentrations should be specifically listed, and information most directly supporting recommended approach to facility should be described. If no information is available in facility files, the response should so indicate. It is also anticipated that this Appendix may be updated periodically as more information becomes available.

1. Description of All Available Monitoring Data for Facility:

Type of Data	Date	Author	Summary of Results or Conclusions
groundwater & soil analysis	1/6/84	Ecology & Environment	3 sets of wells (1 shallow and 1 deep each set) installed by EPA around or on-site. See question #17 for general results.

2. Description of Enforcement Status:

Type of Action	Date	Local, State or Federal	Result or Status
EPA Compliance Order issued	12-2-80	EPA	Unresolved
Complaint, Notice of Hearing & Proposed Consent Decree	8-21-85	State	1 prehearing held 2nd prehearing to be held 1-86

3. Description of Any Complaints from Public:

Source of Complaint	Date	Recipient	Subject and Response
None Known			

4. Description of All Inspection Reports for Facility:

Date of Inspection	Inspector (Local, State, or Federal)	Conclusions or Comments
11-19-1980	EPA	Serious problems with waste handling. EPA compliance order 12-2-80
6-22-1983	EPA	Continuing RCRA violations no resolution of EPA order
3-25-85	State	minor paperwork and Security violations. major problems with lack of GW monitoring and spills. Preliminary indications of GW contamination

5. During inspection of this facility, did the inspector note any evidence of past disposal practices not currently regulated under RCRA, such as piles of waste or rubbish, injection wells, ponds or surface impoundments that might contain waste or active or inactive landfills?

__✓__ YES - give date of inspection and describe observation:

3-25-85 Several surface impoundments at the site not all of which were under interim status

_____ NO _____ DON'T KNOW

6. Do inspection reports indicate observations of discolored soils or dead vegetation that might be caused by a spill, discharge or disposal of hazardous wastes or constituents?

X Yes - indicate date of report and describe observations

3-25-85 — Spills evident at time of State inspection. See Enforcement packet for photos

_____ No

_____ Don't know

7. Do inspection reports indicate the presence of any tanks at the facility which are located below grade and could possibly leak without being noticed by visual observation?

_____ Yes - date of inspection and describe information in report

X No many aboveground tanks are leaking

_____ Don't know

8. Does a groundwater monitoring system exist at the facility? No

9. If answer to question 8 is yes, is the groundwater system capable of monitoring both regulated RCRA units and other Solid Waste Management Units? N/A

Explain -

10. Is the groundwater monitoring system in compliance with applicable RCRA groundwater monitoring standards? N/A

If no, explain deficiency

11. Decribe all information on facility subsurface geology or hydrogeology available.

Type of Information	Author	Date	Summary of Conclusions
Hydrogeological Report	J. King	1978	Hydrogeologic environment is vulnerable to groundwater pollution, partially due to shallow water table & to permeable deposits. Spills & leakage from drums/tanks have been especially destructive. Site specific data needed for accurate determination of groundwater flow gradient thru property.

12. Did the facility submit a 103(c) notification pursuant to CERCLA?

_____ Yes   Date of Notification ____________________

__X__ No

13. If answer to 12 is yes, briefly summarize content of that notification. (waste management units identified, type of waste concerned)

14. Has a CERCLA Preliminary Assessment/Site Investigation (PA/SI) been completed for this facility?

__X__ Yes

_____ No

15. If answer to question 14 is yes, briefly describe conclusions of the PA/SI focusing on types of environmental contamination found, wastes and sources of contamination.

Surface water and groundwater contamination resulting from lagoons, pits, waste piles and numerous spills and leaking tanks. Contaminants include cyanides, hex chromium, spent H_2SO_4, chromic acid, mixed acids, spent ammonium persulfate, waste oil, PCB, HCl, heavy metals, solvents. These result from both past and current operations

16. If available, having reviewed the CERCLA notification, RCRA Part A and RCRA Part B, it appears that: (CERCLA unit refers to unit or area of concern in CERCLA response activity)

X RCRA and CERCLA units are same at this facility

_____ RCRA and CERCLA units are clearly different units

_____ There is an overlap between the RCRA and CERCLA units (some are the same, some are different)

17. Description of Any Past Releases or Environmental Contamination:

Type/Source of Release	Date	Material Released	Quantity	Response
(1) soil contamination	cited by ISBH 3/23/73	—	—	—
(2) groundwater contamination	—	chlorinated organics, cyanides, phenols, heavy metals	—	—
(3) ground eruptions	—	buried (landfilled) reactive wastes or putrescible organic solids.	—	—
(4) groundwater contamination	10/18/83	barium, cobalt, nickel, manganese, methylene chloride, benzene, 1,2-dichloroethane, 1,1,1-trichloroethane, & 1,1-dichloroethane found in downgradient	—	—
(5) soil contamination/ organics from tank #20	6/4/82	solvents	—	—
(6) tank leak/solvents	12/22/81	waste solvents	16,000 gals	liquid removed/ soil put in drums
(7) tank leak/oil	1975-1976	oil	—	—

over

18. Identification of Reports or Documentation Concerning Each Release Described in Item 17.

Title/Type of Report	Date	Author	Recipients	Contents
(1) Erris Executive Summary	7/1/85	R. Molini	—	preliminary assessment
(2) Ecology & Environment	1/6/84	C. Bachunas	R. St. John	soil & H_2O sample results
(3) EPA Site Inspection Report	5/14/84	Ecology & Env.	EPA	description of groundwater contamination
(4) Inorganics Analysis Data Sheet	12/15/83	JTC Env. Lab	EPA	sampling results
(5) FIT Report	6/4/82	D. Woods of Eco. & Env.	—	review of site survey conducted 6/4/82
(6) office memo	2/25/82	J. Hayworth	E. Bohner	report on solvent spill of 12/22/81
(7) Agreed Order	9/11/75	P. Stevens (DWPC)	C.C.C.	letter on pending removal of oil

(over)

19. Highlight any information gaps in the file - describe any plans to obtain additional needed information.

The outcome of C.C.C.'s meeting with EPA regarding EPA's enforcement action of 1980 is missing. Why is the matter not resolved by EPA?

Copies of test data currently being collected by EPA emergency action

20. Summary of major environmental problems noted, desired solution and possible approaches.

Problem	Solution	Approach	Pros and Cons
(1) surface H_2O & groundwater contamination	RCRA closure first; Federal Corrective Action to follow		groundwater contamination is not verified under RCRA
(2) soil contamination from leaks	"		—
(3) potential for disaster from mixed chemicals & faulty storage equipment	cease operation &/or remove tanks/spheres	temporary restraining order - EPA is presently attempting to get this order	

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NAME OF PREPARER Sheryl Atkins

PREPARER IS: USEPA EMPLOYEE [ ]

STATE EMPLOYEE [X]

DATE October 31, 1985

TREATMENT, STORAGE, DISPOSAL FACILITY INITIAL SCREENING FOR ENVIRONMENTAL SIGNIFICANCE

FACILITY NAME Conservation Chemical Co.

FACILITY ID # IND040888992

FACILITY LOCATION 6500 Industrial Highway
STREET ADDRESS

Gary	Lake	Indiana	46406
CITY	COUNTY	STATE	ZIP CODE

LIST ALL CURRENT INTERIM STATUS PROCESS CODES

S01, S02, S04, T01

LIST ALL PROCESS CODES PROPOSED IN PART B APPLICATION (IF APPLICABLE)

S01, S02, S03, T01

INSTRUCTIONS

FOR EACH OF ITEMS 1 THROUGH 11 BELOW, MARK ONE AND ONLY ONE BOX, BASED ON YOUR KNOWLEDGE OF THE FACILITY. USE THE "RATING DISCUSSION" TO ELABORATE, IF DESIRED. NOTE THAT ANY ENVIRONMENTAL CONCERN RATING OF HIGH CONSTITUTES YOUR RECOMMENDATION THAT THIS FACILITY IS "SUFFICIENTLY ENVIRONMENTALLY SIGNIFICANT" TO WARRANT PREPARATION OF A FACILITY MANAGEMENT PLAN. IN ORDER FOR YOU TO RECOMMEND THAT A FACILITY MANAGEMENT PLAN NEED NOT BE PREPARED, EACH AND EVERY ITEM MUST BE MARKED EITHER LOW OR N/A.

Environmental Concern Rating

1. Rate concern relative to the CERCLA Program, and discuss -(National Priority List sites should automatically be high concern; signif- ficant past handlers of CERCLA cleanup wastes should automatically be high concern; facilities that have absolutely no 'CERCLA connection' should be rated N/A)

HIGH	LOW	N/A
X		

RATING DISCUSSION: ~~Positions~~ Portions of facility currently UNDER EPA emergency cleanup for PCB contamination; cyanide wastes are to be cleaned up by generators but many drums and miscellaneous other wastes on-site.

2. Rate concern relative to status as a commer- cial handler, and discuss -- (facilities that handle significant amounts of waste from a variety of sources should be rated high; (facilities that handle only their own company's off-site waste could be rated low; facilities that only handle on-site generated wastes should be rated N/A)

HIGH	LOW	N/A
X		

RATING DISCUSSION: PCB wastes, cyanide wastes, pickle liquor, organics, oils and miscellaneous materials in drums on-site. It has been a commercial TSD facility.

3. Rate concern relative to facility's financial condition (facilities which have or are expected to declare financial insolvency should be rated high)

HIGH	LOW
X	

RATING DISCUSSION: There is a strong possibility the owner will abandon site or declare bankruptcy.

	Environmental Concern Rating		
	HIGH	LOW	N/A
4. Rate concern relative to facility's 40 CFR Part265 compliance status/history, (High Priority Violators and Significant Non-Compliers should be rated high; for proposed facilities, rating is N/A) RATING DISCUSSION: The facility is a significant non-complier for lack of groundwater monitoring, for past history of spills and lack of cooperation in enforcement actions.	X		
5. Based on the waste management processes employed (to be employed) at the facility, rate the concern, and discuss -- (processes subject to ground water monitoring will most often dictate a rating of high; incinerators will most often dictate a rating of high; "contained" storage/treatment such as in drums/tanks will most often rate low) RATING DISCUSSION: Several unlined surface impoundments on-site. Evidence currently exists indicating migration of materials from the impoundments. Also drums are found during excavation on many areas of the site.	X		
6. Based on the presence, absence, significance of old Solid Waste Management Units & whether releases from old or current units are known, suspected, corrected; rate the concern, and discuss -- (known & seriously suspected releases should dictate a rating of high, unless felt to be insignificant/de minimis) RATING DISCUSSION: There are numerous releases at this site, evidence of groundwater contamination, and indication of landfilled reactive waste on-site.	X		

	Environmental Concern Rating		
	HIGH	LOW	N/A
7. Rate concern, based only on the volume and type of waste handled, and discuss -- (low volumes of extremely toxic wastes could rate a high; very heavy volumes of waste could rate a high, though wastes are not particulary dangerous) RATING DISCUSSION: PCBs, cyanide, paint wastes, miscellaneous organics and many unknown materials on-site.	X		
8. Rate concern relative to facility's NON-hazardous waste general environmental regulatory status/history, and discuss -- RATING DISCUSSION: The company handles PCB material (which has been spilled), oils, tar.	X		
9. Rate concern relative to facility's physical location(proximity to population or to sources of accidents or dangers which would tend to increase the facility's inherent danger) RATING DISCUSSION: Across railroad tracks from Gary Airport.	X		

Environmental Concern Rating

10. Rate public concern, for whatever reason

HIGH [ ] LOW [X] N/A

RATING DISCUSSION: There is no evidence of public concern indicated.

11. Other

HIGH [ ] LOW [ ] N/A [ ]

DISCUSS:

BASED ON ABOVE ANALYSIS, RECOMMENDATION IS THAT

Conservation Chemical Company

FACILITY NAME

IS ENVIRONMENTALLY SIGNIFICANT AND A FACILITY MANAGEMENT PLAN WILL BE PREPARED [X]

IS NOT, AT THIS TIME, CONSIDERED TO BE ENVIRONMENTALLY SIGNIFICANT, AND A FACILITY MANAGEMENT PLAN WILL NOT BE PREPARED [ ]

SUMMARY OF FACILITY SCREENING FOR ENVIRONMENTAL SIGNIFICANCE

FACILITY NAME Conservation Chemcial Company

FACILITY ID # IND040888992

	Environmentally Significant YES	Environmentally Significant NO
STATE'S RECOMMENDATION OF December 11, 1985 (DATE)	X	
U.S. EPA RECOMMENDATION OF ______ (DATE)	✓	
JOINT STATE - U.S. EPA DETERMINATION	✓	

Discussion of resolution of issues, if any, in arriving at joint recommendation. Include date(s), location, participants at any resolution meetings.

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9-85

RCRA FACILITY REVIEW FOR SOLID WASTE MANAGEMENT UNITS

FACILITY NAME:	Conservation Chemical Company
EPA ID NUMBER:	IND040888992
LOCATION (CITY, STATE):	Gary, Indiana
DATE OF INSPECTION:	3/25/85
INSPECTOR(S):	Ted Warner
TITLE(S):	Environmental Scientist
FACILITY REPRESENTATIVES PRESENT:	James Peisel

1. Based on a review of State records, describe any land disposal units that have ever had a State permit for managing municipal or industrial (non-hazardous) waste at this site. Summarize the information which is available to indicate whether the waste may contain hazardous constituents and whether the unit may be leaking.

   None known.

2. Based on a review of State records, describe any incinerators or other solid waste management units at this site (other than those treatment, storage and disposal units that have interim status) for which a State air pollution control permit has been issued. Summarize the information which is available to indicate whether the waste may contain hazardous constituents, and whether and whether the emissions from the unit may contain hazardous constituents.

   None known.

3. Based on a review of State records (including CERCLA 103(c) notifications, complaints from the public, etc.) describe any known, suspected or likely releases of hazardous constituents to the environment from solid waste management units, except those spills not related to a specific unit, which were properly reported and cleaned up.

   See attachments 1 and 2.

4. Based on State records, describe any permitted injection wells at this facility and indicate whether injected the wastes may contain hazardous waste or hazardous constituents. Summarize the information which is available to indicate whether hazardous constituents may be escaping to the environment through improperly constructed or managed injection wells.

None known.

5. Did you see any of the following solid waste management units or evidence of prior existance of such a unit at the facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN THE PART B APPLICATION

	YES	NO
• Landfill	X	
• Surface Impoundment	X	
• Land Farm		X
• Waste Pile	X	
• Incinerator		X
• Storage Tank (Above Ground)	X	
• Storage Tank (Underground)		X
• Container Storage Area	X	
• Injection Wells		X
• Wastewater Treatment Units		X
• Transfer Stations		X
• Waste Recycling Operations	X	
• Waste Treatment, Detoxification	X	
• Other ______		X

6. If there are "Yes" answers to any of the items in Number 5 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if available. You may simply reference the owner or operator's "Certification Regarding Potential Releases from Solid Waste Management Units" if the description contained therein appears to be accurate.

Landfill-unknown-possibly drummed reactive wastes. SI/WP--K049(2100 TPY)

Storage tank--K062(15000 TPY), F007(750 TPY), F008(750 TPY), F009(750 TPY),

D002(15 TPY), K049(285 TPY), F001(370 TPY), F002(370 TPY), F003(370 TPY),

D003(18 TPY). S01--unknown, probably cyanide waste. Tank treatment--K062

(15000 TPY), F007(750 TPY), F008(750 TPY), F009(750 TPY), D002(15 TPY) D003(18 TPY).

7. If previous inspection reports indicated the presence of solid waste management units other than those described above, what is known about them?

None known.

8. Describe other information about existing or closed solid waste management units at this facility that should be considered in determining whether there may be a continuing release of hazardous waste or hazardous constituents from solid waste mangement units.

See attachment 3.

Sheryl Atkins
Typed or Printed Name - State Permit Writer

Dennis E. Williamson for Sheryl Atkins
Signature - State Permit Writer

1-27-86
Date

Attachment 1

1. 11/28/72: Article in file indicates two basins for dumping chemicals. Owner admitted landfilling drums, but would not disclose site.

2. 3/20/73: Stream Pollution Control Board adopted an Agreed Order to prevent Conservation Chemical from adding waste to basins or lagoons and to remove all materials within 60 days.

3. 12/74: Letter from ISBH indicating approval for construction of 2 sludge drying beds.

4. 4/25/75: Company submitted plans for cyanide waste reclamation-which were approved according to undated letters in file.

5. 3/8/76: CCC cited for contempt of court for the March 20, 1973, Agreed Order.

6. 6/30/76: Letter from CCC indicating leaks of oil from underground transmission oil pipelines that crisscross property-ownership of pipelines unknown. Letter to Attorney General's Office from ISBH indicates a continuing second leak (first leak was supposedly repaired by CCC) from tank #19 is the probable cause and not underground lines.

7. 12/21/77: CCC was notified of improper storage of cyanide in drums.

8. 5/1/78: Report states that most drums of cyanide had been removed.

9. 6/22/83: EPA inspection of June 22, 1983, confirmed continued non-compliance. Evidence of releases were observed in numerous locations throughout facility. Numerous containers on-site had rusted through. An employee admitted there had been leaks of cyanide and chlorine from tank cars and storage tanks.

10. 10/4/83: EPA letter states that Compliance Order of December 2, 1980, against CCC remains unresolved.

11. 5/6/85: CCC submits revised Part A for S01, S02, and T01. Also, the S04 process code was changed by the company to S03.

12. 5/30/85: Letter citing that even though CCC will no longer store wastes in surface impoundment, they must install groundwater wells since they have stored hazardous wastes there after November 19, 1980. An undated hydrogeologist report characterized the company's activities as waste neutralizaton, storage, oil, and solvent recovery. This report stated that groundwater is vulnerable to pollution at this site.

13. 7/1/85: Executive Summary of site states that surface water and groundwater contamination have been documented. Activities include waste neutralization, solvent recovery, and storage. Priority assessment ranked high. Activities began at site in 1969. Substances present include cyanide, hexavalent chromium, spent acids, heavy metals, solvents, and waste oils. All lagoons, spills, and waste piles discharge contaminants to the shallow Calumet aquifer. Analysis of groundwater shows detectable concentrations of chlorinated organics, cyanides, phenols, and heavy metals. The contaminated groundwater may eventually discharge into Lake Michigan.

14. 8/21/85: Summary and Request for Hearing. Due to past history of facility, including spills, lack of cooperation in enforcement actions, and lack of responsibility in cleaning up spills, this facility should be viewed as a serious environmental problem and is a significant non-complier. There is strong potential of exposure (due to spills) to humans.

15. 9/26/85: Memo to file stating $3.6 million appropriation for EPA treatment of cyanide waste and precipitation metals.

16. 6/24/85: NOV for financial assurance. Materials that may have been spilled or disposed of on-site include:

a. waste oil from oil reclaiming operation
b. cyanide in drums and bulk storage
c. cyanide and hexavalent chromium in drums, paint, and paint solvents in drum storage
d. spent sulfuric acid
e. spent ammonium sulfate
f. spent chromic acid
g. mixed acids
h. hydrochloric acid
i. heavy metal salts
j. solvents
k. treatment sludges

SA/sk

Attachment 2

EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS	I. IDENTIFICATION 01 STATE: IN 02 SITE NUMBER: D040888992

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☒ OBSERVED (DATE: 10/18/83) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 215
04 NARRATIVE DESCRIPTION
Barium, Cobalt, Nickel, Manganese and methylene chloride were found in downgradient wells at many times the concentration found in upgradient wells. Benzene, 1,2-Dichloroethane, 1,1,1-Trichloroethane and 1,1-Dichloroethane were absent in upgradient wells, but present in downgradient wells in concentrations as high as 950, 880, 6700 and 1800 ppb respictively.

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
A Ponds occurs just west of property. Another one is ~1/3 mile to southwest. Grand Calumet River is ~.8 mile to south. Water naturally ponds on site, so contaminents could reach ponded areas and migrate offsite in high water periods. Tanks and drums at site are known to be leaking. There have been spills of waste solvents. Spilled and leaked materials could migrate to nearby surface waters.

01 ☒ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
Peter Julovich of Gary Air Pollution Control complained about cyanide fumes at site.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
Leaking oil tanks, oil ponding in diked areas and oil-contaminated soil are fire hazards. Possible "eruptions" and gas emissions originating below the six-foot depth, attributed to possible buried reactive waste or putrescible organic solids may be explosive in nature. Also large volumes of flammable solvent in tanks with questionable integrity are potentially hazardous.

01 ☒ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
A 3 foot high fence surrounds site, but it is easily stepped over.
No other security measures.

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: August 1983) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 4.1 (acres)
04 NARRATIVE DESCRIPTION
An acid-contaminated soil zone is located in southern corner of site north of lagoon across railroad spur. Soda ash is poured on soil to neutralize ponded water. Other soil areas at site could be contaminated by spills from production area, leaks from tanks and drums and residues of oil product spills dating from the refinery that was there before Conservation Chemical

01 ☒ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
Major water source is Lake Michigan. Calumet Aquifer is little used in this part of Lake County, but is highly vulnerable due to the high water table, sandy-permeable soils, and highly transmissive materials at shallow depths.

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION
Workers could be exposed to hazardous substances during normal manufacturing, reclamation and waste treatment operations. They could also be exposed to leaked and spilled materials.
No worker incidents are known of.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IN	D040888992

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ■ D. SPILLED MATERIAL REMOVED
04 DESCRIPTION General Drainage transferred 3,000 gallons of spilled liquid to an empty storage tank on site.
02 DATE 12-24-81 03 AGENCY ____

01 ■ E. CONTAMINATED SOIL REMOVED
04 DESCRIPTION General Drainage used a front end loader to remove contaminated soil. The soil was placed in another empty storage tank on site
02 DATE 12-26-81 03 AGENCY ____

01 ☐ F. WASTE REPACKAGED
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ■ G. WASTE DISPOSED ELSEWHERE
04 DESCRIPTION Drums of liquid from Conservation Chemical were trenched at a landfill at Able Disposal, Chesterton, IN.
02 DATE July - Aug 1972 03 AGENCY ____

01 ■ H. ON SITE BURIAL
04 DESCRIPTION Evidence of possible on-site burial is eruptions from the on-site lagoon due to possibly buried containers or decomposition of putrescibles
02 DATE ____ 03 AGENCY ____

01 ■ I. IN SITU CHEMICAL TREATMENT
04 DESCRIPTION Chemical waste treatment includes: neutralization, precipitation, oxidation and reduction.
02 DATE ____ 03 AGENCY ____

01 ☐ J. IN SITU BIOLOGICAL TREATMENT
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ■ K. IN SITU PHYSICAL TREATMENT
04 DESCRIPTION Physical waste treatment includes: evaporation, filtration, carbon sorption, sedimentation, blending.
02 DATE ____ 03 AGENCY ____

01 ☐ L. ENCAPSULATION
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ☐ M. EMERGENCY WASTE TREATMENT
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ☐ N. CUTOFF WALLS
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

01 ■ P. CUTOFF TRENCHES/SUMP
04 DESCRIPTION The northern [illegible] pit serves as the sump for drainage of the [illegible] process and between the office/shop building and the railroad embankment.
02 DATE ____ 03 AGENCY ____

01 ☐ Q. SUBSURFACE CUTOFF WALL
04 DESCRIPTION
02 DATE ____ 03 AGENCY ____

EPA FORM 2070-13 (7-81)

E: CC = Conservation Chemical

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D040888992

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☒ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

① State of Indiana, October 1972. Notice to advise State of procedur CC has instituted to insure adequate treatment of hazardous chemicals prior to disposal.

② State of Indiana, November 1972. Hearing held on behalf of Stat Pollution control board to determine if CC is in violation.

③ State of Indiana, December 1972. Three copies of Agreed Order sent to Hjersted. Contains time schedules for neutralizing of wastes, filling of earthen lagoons and providing proper storage of materials to be processed.

④ State of Indiana, February 1973. Issue of revised Agreed Order.

⑤ State of Indiana, March 1973. Agreed order was issued by the Stream Pollution Control Board relative to abatement of surface and ground pollution and disposal of human waste.

⑥ State of Indiana, April 1973. Pumping of a liquid from a railroad tank car into an earthen lagoon - which is in direct violation of paragraph one of the Agreed Order of March 20, 1973.

⑦ State of Indiana, May 1973. Request of justification for the State's recommendation that CC discharge sanitary wastes to either municipal sewers of Gary or construct an approved septic system.

⑧ State of Indiana, September 1973. Norman Hjersted is advised that failure to comply with time schedule in State Board of Health's order will result in continued enforcement action.

⑨ State of Indiana, September 1975. Notice of violation of Agreed Order in not removing the oil leaked from a bulk storage tank. Must remove by October 1, 1975.

⑩ State of Indiana, September 1975. Inquisition as to how CC will operate w/o a registered waste treatment plant operator as outlined in the regulation entitled "Certification of Water and Waste Treatment Plant Operators."

⑪ State of Indiana (to: Theodore L. Sendak, Attorney General) December 1975. Request to pursue fines under provisions of IC 1971, 13-7 for violations of Agreed Order of March 20, 1973.

* NOTE: This is a partial listing of past enforcement actions.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

State of Indiana Files.

EPA FORM 2070-13 (7-81)

?
?

Attachment 3

INDIANA STATE BOARD OF HEALTH
DIVISION OF WATER POLLUTION CONTROL

HAZARDOUS MATERIAL SPILL AND FISH KILL LOG SYSTEM

Date of INCIDENT : 12/21/81 Date REPORTED : 12/22/81 REPORTED BY : RESPONSIBLE PARTY
Type : SPILL County : LAKE INVESTIGATED BY : E.R.S
Nearest CITY : GARY SOURCE : INDUSTRIAL
Receiving Body of WATER : GROUND WATER Segment : 1 NAME : CONSERVATION CHE
Area Affected : UNK

MATERIAL : MISCELLANEOUS CHEMICAL Description : WASTE SOLVENT Number of Fish Kill : 0
Amount SPILLED : 16000,GAL Contained : YES Mun or Ind Water Affected : NO
Amount RECOVERED or NEUTRALIZED : UNK,GAL GAL ENVIRONMENTAL CONSEQUENCE : WATER QUALITY VIOLATION
CIRCUMSTANCES of Spill : EQUIPMENT FAILURE Action Taken to MINIMIZE DAMAGE : PARTIAL CLEANUP
Cleanup Duration : 2 DAYS ENFORCEMENT ACTION TAKEN : NONE

** RECORD NUMBER 636 ************ ↑↑ INCIDENT NUMBER 632 ↑↑

Date of INCIDENT : 09/30/85 Date REPORTED : 09/30/85 REPORTED BY : RESPONSIBLE PARTY
Type : SPILL County : LAKE INVESTIGATED BY : COUNTY HEALTH DEPT.
Nearest CITY : GARY SOURCE : INDUSTRIAL
Receiving Body of WATER : NONE Segment : 01 NAME : CONSERVATION CHE
Area Affected : DIKE

MATERIAL : PETROLEUM PRODUCTS Description : FUEL OIL SLUDGE Number of Fish Kill : 0
Amount SPILLED : 6000,GAL Contained : YES Mun or Ind Water Affected : NO
Amount RECOVERED or NEUTRALIZED : 6000,GAL ENVIRONMENTAL CONSEQUENCE : NO WATER QUALITY VIOLATION
CIRCUMSTANCES of Spill : EQUIPMENT FAILURE Action Taken to MINIMIZE DAMAGE : CLEANUP
Cleanup Duration : 2 DAYS ENFORCEMENT ACTION TAKEN : NONE

** RECORD NUMBER 528 ************ ↑↑ INCIDENT NUMBER 850955 ↑↑

Name of Preparer: Sheryl Atkins / Christa Henson
Date: 12/19/85

Model Facility Management Plan

1. Facility Name: Conservation Chemical Co.

2. Facility I.D. Number: IND 040888992

3. Owner and/or Operator: Norman B. Hjersted

4. Facility Location: 6500 Industrial Hwy
Street Address

Gary	Lake	Ind	46406
City	County	State	Zip Code

5. Facility Telephone (if available): (219) 949-8229

6. Interim Status and/or Permitted Hazardous Waste Units and Capacities of Each Unit:

Type of Units	Size or Capacity	Active or Closed
✓ Storage in Tanks or Containers	100,000 gal - container 620,000 gal - tank	Active Active
___ Incinerator		
___ Landfill		
✓ Surface Impoundment	600,000 gal -	Active
___ Waste Pile		
___ Land Treatment		
___ Injection Wells		
___ Others (Specify)		

7. Permit Application Status: ____________ (HWDMS action item number)

RCRA FACILITY REVIEW FOR SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: Conservation Chemical Company
EPA ID NUMBER: IND040888992
LOCATION (CITY, STATE): Gary, Indiana
DATE OF INSPECTION: 3/25/85
INSPECTOR(S): Ted Warner
TITLE(S): Environmental Scientist
FACILITY REPRESENTATIVES PRESENT: James Poisel

1. Based on a review of State records, describe any land disposal units that have ever had a State permit for managing municipal or industrial (non-hazardous) waste at this site. Summarize the information which is available to indicate whether the waste may contain hazardous constituents and whether the unit may be leaking.

   None known.

2. Based on a review of State records, describe any incinerators or other solid waste management units at this site (other than those treatment, storage and disposal units that have interim status) for which a State air pollution control permit has been issued. Summarize the information which is available to indicate whether the waste may contain hazardous constituents, and whether and whether the emissions from the unit may contain hazardous constituents.

   None known.

3. Based on a review of State records (including CERCLA 103(c) notifications, complaints from the public, etc.) describe any known, suspected or likely releases of hazardous constituents to the environment from solid waste management units, except those spills not related to a specific unit, which were properly reported and cleaned up.

   See attachments 1 and 2.

4. Based on State records, describe any permitted injection wells at this facility and indicate whether injected the wastes may contain hazardous waste or hazardous constituents. Summarize the information which is available to indicate whether hazardous constituents may be escaping to the environment through improperly constructed or managed injection wells.

None known.

5. Did you see any of the following solid waste management units or evidence of prior existance of such a unit at the facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN THE PART B APPLICATION

	YES	NO
• Landfill	X	
• Surface Impoundment	X	
• Land Farm		X
• Waste Pile	X	
• Incinerator		X
• Storage Tank (Above Ground)	X	
• Storage Tank (Underground)		X
• Container Storage Area	X	
• Injection Wells		X
• Wastewater Treatment Units		X
• Transfer Stations		X
• Waste Recycling Operations	X	
• Waste Treatment, Detoxification	X	
• Other ______		X

6. If there are "Yes" answers to any of the items in Number 5 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if avalable. You may simply reference the owner or operator's "Certification Regarding Potential Releases from Solid Waste Management Units" if the description contained therein appears to be accurate.

Landfill-unknown-possibly drummed reactive wastes. SI/WP--K049(2100 TPY) Storage tank--K062(15000 TPY), F007(750 TPY), F008(750 TPY), F009(750 TPY), D002(15 TPY), K049(285 TPY), F001(370 TPY), F002(370 TPY), F003(370 TPY), D003(18 TPY). S01--unknown, probably cyanide waste. Tank treatment--K062 (15000 TPY), F007(750 TPY), F008(750 TPY), F009(750 TPY), D002(15 TPY) D003(18 TPY).

7. If previous inspection reports indicated the presence of solid waste management units other than those described above, what is known about them?

None known.

8. Describe other information about existing or closed solid waste management units at this facility that should be considered in determining whether there may be a continuing release of hazardous waste or hazardous constituents from solid waste mangement units.

See attachment 3.

Sheryl Atkins

Typed or Printed Name - State Permit Writer

Signature - State Permit Writer

Date

Attachment 1

1. 11/28/72: Article in file indicates two basins for dumping chemicals. Owner admitted landfilling drums, but would not disclose site.

2. 3/20/73: Stream Pollution Control Board adopted an Agreed Order to prevent Conservation Chemical from adding waste to basins or lagoons and to remove all materials within 60 days.

3. 12/74: Letter from ISBH indicating approval for construction of 2 sludge drying beds.

4. 4/25/75: Company submitted plans for cyanide waste reclamation-which were approved according to undated letters in file.

5. 3/8/76: CCC cited for contempt of court for the March 20, 1973, Agreed Order.

6. 6/30/76: Letter from CCC indicating leaks of oil from underground transmission oil pipelines that crisscross property-ownership of pipelines unknown. Letter to Attorney General's Office from ISBH indicates a continuing second leak (first leak was supposedly repaired by CCC) from tank #19 is the probable cause and not underground lines.

7. 12/21/77: CCC was notified of improper storage of cyanide in drums.

8. 5/1/78: Report states that most drums of cyanide had been removed.

9. 6/22/83: EPA inspection of June 22, 1983, confirmed continued non-compliance. Evidence of releases were observed in numerous locations throughout facility. Numerous containers on-site had rusted through. An employee admitted there had been leaks of cyanide and chlorine from tank cars and storage tanks.

10. 10/4/83: EPA letter states that Compliance Order of December 2, 1980, against CCC remains unresolved.

11. 5/6/85: CCC submits revised Part A for S01, S02, and T01. Also, the S04 process code was changed by the company to S03.

12. 5/30/85: Letter citing that even though CCC will no longer store wastes in surface impoundment, they must install groundwater wells since they have stored hazardous wastes there after November 19, 1980. An undated hydrogeologist report characterized the company's activities as waste neutralizaton, storage, oil, and solvent recovery. This report stated that groundwater is vulnerable to pollution at this site.

13. 7/1/85: Executive Summary of site states that surface water and groundwater contamination have been documented. Activities include waste neutralization, solvent recovery, and storage. Priority assessment ranked high. Activities began at site in 1969. Substances present include cyanide, hexavalent chromium, spent acids, heavy metals, solvents, and waste oils. All lagoons, spills, and waste piles discharge contaminants to the shallow Calumet aquifer. Analysis of groundwater shows detectable concentrations of chlorinated organics, cyanides, phenols, and heavy metals. The contaminated groundwater may eventually discharge into Lake Michigan.

14. 8/21/85: Summary and Request for Hearing. Due to past history of facility, including spills, lack of cooperation in enforcement actions, and lack of responsibility in cleaning up spills, this facility should be viewed as a serious environmental problem and is a significant non-complier. There is strong potential of exposure (due to spills) to humans.

15. 9/26/85: Memo to file stating $3.6 million appropriation for EPA treatment of cyanide waste and precipitation metals.

16. 6/24/85: NOV for financial assurance. Materials that may have been spilled or disposed of on-site include:

a. waste oil from oil reclaiming operation
b. cyanide in drums and bulk storage
c. cyanide and hexavalent chromium in drums, paint, and paint solvents in drum storage
d. spent sulfuric acid
e. spent ammonium sulfate
f. spent chromic acid
g. mixed acids
h. hydrochloric acid
i. heavy metal salts
j. solvents
k. treatment sludges

SA/sk

Attachment 2

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE: IN
02 SITE NUMBER: D040888992

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ■ A. GROUNDWATER CONTAMINATION
02 ■ OBSERVED (DATE: 10/18/83) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 215
04 NARRATIVE DESCRIPTION
Barium, Cobalt, Nickel, Manganese and methylene chloride were found in downgradient wells at many times the concentration found in upgradient wells. Benzene, 1,2-Dichloroethane, 1,1,1-Trichloroethane and 1,1-Dichloroethane were absent in upgradient wells, but present in downgradient wells in concentrations as high as 950, 880, 6700 and 1800 ppb respictively.

01 ■ B. SURFACE WATER CONTAMINATION
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
A Pond occurs just west of property. Another one is ~1/3 mile to southwest. Grand Calumet River is ~.8 mile to south. Water naturally ponds on site, so contaminants could reach ponded areas and migrate offsite in high water periods. Tanks and drums at site are known to be leaking. There have been spills of waste solvents. Spilled and leaked materials could migrate to nearby surface waters.

01 ■ C. CONTAMINATION OF AIR
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
Peter Julovich of Gary Air Pollution Control complained about cyanide fumes at site.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
Leaking oil tanks, oil ponding in diked areas and oil-contaminated soil are fire hazards. Possible "eruptions" and gas emissions originating below the six-foot depth, attributed to possible buried reactive waste or putrescible organic solids may be explosive in nature. Also large volumes of flammable solvent in tanks with questionable integrity are potentially hazardous.

01 ■ E. DIRECT CONTACT
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
A 3 foot high fence surrounds site, but it is easily stepped over.
No other security measures.

01 ■ F. CONTAMINATION OF SOIL
02 ■ OBSERVED (DATE: August 1983) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 4.1 (Acres)
04 NARRATIVE DESCRIPTION
An acid-contaminated soil zone is located in southern corner of site north of lagoon across railroad spur. Soda ash is poured on soil to neutralize ponded water. Other soil areas at site could be contaminated by spills from production area, leaks from tanks and drums and residues of oil product spills dating from the refinery that was there before Conservation Chemical

01 ■ G. DRINKING WATER CONTAMINATION
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
Major water source is Lake Michigan. Calumet Aquifer is little used in this part of Lake County, but is highly vulnerable due to the high water table, sandy-permeable soils, and highly transmissive materials at shallow depths.

01 ■ H. WORKER EXPOSURE/INJURY
02 ☐ OBSERVED (DATE:) ■ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION
Workers could be exposed to hazardous substances during normal manufacturing, reclamation and waste treatment operations. They could also be exposed to leaked and spilled materials.
No worker incidents are known of.

01 ☐ I. POPULATION EXPOSURE/INJURY
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D040888992

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ■ D. SPILLED MATERIAL REMOVED
04 DESCRIPTION General Drainage transferred 3,000 gallons of spilled liquid to an empty storage tank on site.
02 DATE 12-24-81 03 AGENCY ______

01 ■ E. CONTAMINATED SOIL REMOVED
04 DESCRIPTION General Drainage used a front end loader to remove contaminated soil. The soil was placed in another empty storage tank on site
02 DATE 12-26-81 03 AGENCY ______

01 ☐ F. WASTE REPACKAGED
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ■ G. WASTE DISPOSED ELSEWHERE
04 DESCRIPTION Drums of liquid from Conservation Chemical were trenched at a landfill at Able Disposal, Chesterton, IN.
02 DATE July-Aug 1972 03 AGENCY ______

01 ■ H. ON SITE BURIAL
04 DESCRIPTION Evidence of possible on-site burial is eruptions from the on-site lagoon due to possibly buried containers or decomposition of putrescibles
02 DATE ______ 03 AGENCY ______

01 ■ I. IN SITU CHEMICAL TREATMENT
04 DESCRIPTION Chemical waste treatment includes: neutralization, precipitation, oxidation and reduction.
02 DATE ______ 03 AGENCY ______

01 ☐ J. IN SITU BIOLOGICAL TREATMENT
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ■ K. IN SITU PHYSICAL TREATMENT
04 DESCRIPTION Physical waste treatment includes: evaporation, filtration, carbon sorption, sedimentation, blending.
02 DATE ______ 03 AGENCY ______

01 ☐ L. ENCAPSULATION
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ☐ M. EMERGENCY WASTE TREATMENT
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ☐ N. CUTOFF WALLS
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

01 ■ P. CUTOFF TRENCHES/SUMP
04 DESCRIPTION The northern on-site pit serves as the sump for drainage of the entire process area between the office/shop building and the railroad embankment.
02 DATE ______ 03 AGENCY ______

01 ☐ Q. SUBSURFACE CUTOFF WALL
04 DESCRIPTION
02 DATE ______ 03 AGENCY ______

E: CC = Conservation Chemical

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D040888992

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☒ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

(1) State of Indiana, October 1972. Notice to advise State of procedur CC has instituted to insure adequate treatment of hazardous chemicals prior to disposal.

(2) State of Indiana, November 1972. Hearing held on behalf of Stt pollution control board to determine if CC is in violation.

(3) State of Indiana, December 1972. Three copies of Agreed Order sent to Hjersted. Contains time schedules for neutralizing of wastes, filling of earthen lagoons and providing proper storage of materials to be processed.

(4) State of Indiana, February 1973. Issue of revised Agreed Order.

(5) State of Indiana, March 1973. Agreed order was issued by the Stream Pollution Control Board relative to abatement of surface and ground pollution and disposal of human waste.

(6) State of Indiana, April 1973. Pumping of a liquid from a railroad tank car into an earthen lagoon - which is in direct violation of paragraph one of the Agreed Order of March 20, 1973.

(7) State of Indiana, May 1973. Request of justification for the State's recommendation that CC discharge sanitary wastes to either municipal sewers of Gary or construct an approved septic system.

(8) State of Indiana, September 1973. Norman Hjersted is advised that failure to comply with time schedule in State Board of Health's order will result in continued enforcement action.

(9) State of Indiana, September 1975. Notice of violation of Agreed Order in not removing the oil leaked from a bulk storage tank. Must remove by October 1, 1975.

(10) State of Indiana, September 1975. Inquisition as to how CC will operate w/o a registered waste treatment plant operator as outlined in the regulation entitled "Certification of Water and Waste Treatment Plant Operators."

(11) State of Indiana (to: Theodore L. Sendak, Attorney General) December 1975. Request to pursue fines under provisions of IC 1971, 13-7 for violations of Agreed Order of March 20, 1973.

* NOTE: This is a partial listing of past enforcement actions.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

State of Indiana Files.

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Attachment 3

INDIANA STATE BOARD OF HEALTH
DIVISION OF WATER POLLUTION CONTROL

HAZARDOUS MATERIAL SPILL AND FISH KILL LOG SYSTEM

Date of INCIDENT : 12/21/81 Date REPORTED : 12/22/81 REPORTED BY : RESPONSIBLE PARTY
Type : SPILL County : LAKE INVESTIGATED BY : E.R.S ER
Nearest CITY : GARY SOURCE : INDUSTRIAL
Receiving Body of WATER : GROUND WATER Segment : 1 NAME : CONSERVATION CHE
Area Affected : UNK

MATERIAL : MISCELLANEOUS CHEMICAL Description : WASTE SOLVENT Number of Fish Kill : 0
Amount SPILLED : 16000,GAL Contained : YES Mun or Ind Water Affected : NO
Amount RECOVERED or NEUTRALIZED : UNK,GAL GAL ENVIRONMENTAL CONSEQUENCE : WATER QUALITY VIOLATION
CIRCUMSTANCES of Spill : EQUIPMENT FAILURE Action Taken to MINIMIZE DAMAGE : PARTIAL CLEANUP
Cleanup Duration : 2 DAYS ENFORCEMENT ACTION TAKEN : NONE

************************************* RECORD NUMBER 636 *********** ^^ INCIDENT NUMBER 632 ^^

Date of INCIDENT : 09/30/85 Date REPORTED : 09/30/85 REPORTED BY : RESPONSIBLE PARTY
Type : SPILL County : LAKE INVESTIGATED BY : COUNTY HEALTH DEPT. ER
Nearest CITY : GARY SOURCE : INDUSTRIAL
Receiving Body of WATER : NONE Segment : 01 NAME : CONSERVATION CHE
Area Affected : DIKE

MATERIAL : PETROLEUM PRODUCTS Description : FUEL OIL SLUDGE Number of Fish Kill : 0
Amount SPILLED : 6000,GAL Contained : YES Mun or Ind Water Affected : NO
Amount RECOVERED or NEUTRALIZED : 6000,GAL ENVIRONMENTAL CONSEQUENCE : NO WATER QUALITY VIOLATION
CIRCUMSTANCES of Spill : EQUIPMENT FAILURE Action Taken to MINIMIZE DAMAGE : CLEANUP
Cleanup Duration : 2 DAYS ENFORCEMENT ACTION TAKEN : NONE

************************************* RECORD NUMBER 528 *********** ^^ INCIDENT NUMBER 850955 ^^